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Conception of giftedness and talent by pre service and in service primary school teachers in Johor, Malaysia: An exploration using a multiphase mixed methods design

Hadijah Jaffri

A thesis submitted in fulfilment of the requirement for the degree of Doctor of Philosophy in Durham University

School of Education

Durham University

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Abstract

The main purpose of this study is to investigate the conception of giftedness and talent as perceived by pre service and in service primary school teachers in Malaysia. In addition, this study aims to explore teachers' perceptions of giftedness on specific issues which are a) sources of information about giftedness, b) confidence in identifying gifted and talented students, c) awareness on identifying assessments, d) perception about the adequacy of teacher training to deal with gifted and talented students, e) relevance of labelling, and f) aspects considered as important in the development of gifted education in Malaysia which are primarily explored using qualitative approaches.

To explore those various issues, a mixed methods design was used in this study involving pre service (n = 546) and in service primary school teachers (n = 632). Structured questionnaires were administered to 1178 teachers at various locations of education institutions (e.g. schools, institutes of teacher education and universities). Six female teachers were involved in the qualitative data collection using semi-structured questionnaires and interviews.

Two main types of analyses were used. First, the patterns of teachers' notion of giftedness and talent are examined using principal component analysis. In addition to that, descriptive analysis was used to provide preliminary findings of this study. Also, independent t-test was used to examine any difference between groups. Second, thematic analysis was used to uncover thematic code (variables) from relevant responses.

The findings from quantitative and qualitative data were integrated to answer two research questions. Based from the integration of both findings, it was found that teachers' conception of giftedness and talent is diverse and this reflect on the current situation in which there is no consensus on the conception of giftedness and talent among theorists. In addition, Malaysian teachers reported that 'gifted' and 'talented' are separate groups of individuals with extraordinary abilities. Giftedness is perceived in relation to intellectual abilities and to certain extent, domain specific to mathematics and science. Talent is perceived in relation to non-intellective abilities such as domain of psychomotor abilities. Even though gifted and talented are perceived as non-unitary concept, both are perceived sharing similar characteristics such as creativity and domain specific of ability. In this study,

it was discovered that giftedness is perceived in relation to intellective domain whereas talent is related to non-intellective domain.

The qualitative findings suggested that teachers view giftedness and talent somewhat differently. The variations are explored to in this study which could be attributed to the inadequacy of information from various sources and teacher training and/or experience. The nuances of their understanding on varied aspects in relation to this phenomenon called as giftedness call for more exploration as this study only provides preliminary evidence on the existing conception of giftedness and talent as held by teachers in Malaysia.

Table of Contents

ABSTRACT ..... **I**

TABLE OF CONTENTS ..... **III**

DECLARATION ..... **X**

STATEMENT OF COPYRIGHT ..... **X**

DEDICATION ..... **XI**

ACKNOWLEDGEMENT ..... **XII**

ABBREVIATIONS AND ACRONYMS ..... **XIII**

LISTS OF FIGURE ..... **XIV**

LIST OF TABLES ..... **XV**

CHAPTER 1: INTRODUCTION **1**

1.1 Background of the study: Personal aspiration **1**

1.2 Purpose of the study **6**

1.3 Significance of the study **7**

1.4 Rationale for research questions **7**

1.5 Definition of key terms **8**

1.6 Structure of the thesis: An overview of chapters **10**

CHAPTER 2: GIFTEDNESS? WHAT AND HOW IT IS VALUED **12**

2.1 Introduction **12**

2.2 Giftedness: An initial literature exploration 12

2.3 Definitions: A review and challenges in finding the best proposition 13

2.4 Conceptions of giftedness and talent: A historical glimpse 16

2.4.1 Galton's propositions of gifted individuals 16

2.4.2 Terman's longitudinal study on giftedness 18

2.4.3 The Marland Report (1971) 22

2.5 Conceptions of giftedness and talent: Models or theories 26

2.6 Which models or theories best described giftedness and talent? 47

2.7 Conclusion 48

CHAPTER 3: WHAT IS GIFTED AND TALENTED?: AN EXPLORATION OF SOCIAL DIFFERENCES 51

3.1 Introduction 51

3.2 Conceptions of giftedness and talent: a glimpse on UK context 51

3.2.1 Giftedness: a variation of terms used in the United Kingdom 53

3.3 Conceptions of giftedness and talent: A glimpse on Malaysian context 58

3.4 Conceptions of giftedness and talent: a review from studies in various societies and countries 66

3.4.1 Conceptions of giftedness and talent: examples of European context 67

3.4.2 Conceptions of giftedness and talent: examples of Polynesian context 69

3.4.3 Conceptions of giftedness and talent: examples of African context 70

3.4.4 Conceptions of giftedness and talent: examples of Asian context 70

3.5 Conclusion 73

CHAPTER 4: TEACHERS' CONCEPTIONS OF GIFTEDNESS AND TALENT AND ITS IMPLICATIONS 75

4.1 Introduction 75

4.2 Teachers' conceptions of giftedness and talent: a general review 76

4.2.1 Discrepancy between personal understanding and official definitions of giftedness and talent 77

4.2.2 Different emphases of characteristics of giftedness and talent 77

4.2.3 Classification and/or differentiation of abilities according to ability domains 81

4.3 Teacher training and/or experience in relation to the conceptions of giftedness and talent 82

4.4 The conceptions of giftedness and talent by teachers in different countries: a review 86

4.5 Teachers' conceptions of giftedness and talent: reliability of teachers' nomination of gifted and talented students 88

4.6 School labelling: a general notion about gifted and talented students 92

4.7 Conclusion 94

CHAPTER 5: RESEARCH FRAMEWORK AND METHODOLOGY 96

5.1 Introduction 96

5.2 A glimpse of teachers education programs in Malaysia: sampling rationale 96

5.3 Using a mixed methods research 99

5.4 Research design: phases 102

5.4.1 Research phases 102

5.4.1.2 Pilot study: a refining phase 109

5.4.1.3 Main study: data collection phases 117

5.5 Variables identification and hypothesis statements 118

5.4.1 Perceived characteristics of gifted and talented 119

5.4.2 Related issues 122

5.5 Research design: instruments 131

5.5.1 Questionnaire 132

5.5.1.1 Structured questionnaire 133

5.5.1.2 Semi structured questionnaire 134

5.5.2 Interview 134

5.6 Determining validity of research instruments 137

5.6.1 Validity testing for research instruments 138

5.6.2 Reliability testing: structured questionnaire 142

5.7 Research design: sampling (The main study) 143

5.8 Research design: an overview 146

5.9 Methods of data analysis: a foreword 147

5.10 Conclusion 148

CHAPTER 6: PRELIMINARY FINDINGS AND ANALYSES (PART A)..... 149

6.1 Introduction 149

6.2 An overview of analyses: Survey, semi-structured questionnaire and interview 149

6.2.1 Survey 149

6.2.2 Semi structured questionnaire (Open-ended questions) and Interview 150

6.2.2.1 Duration: for semi-structured questionnaire and interview session 151

6.2.2.2 Interview administration 151

6.2.2.3 Transforming verbal data to written transcripts 152

6.2.2.4 Translating Malay transcripts to English 156

6.2.2.5 Thematic analysis process 157

6.2.2.7 Interpreting qualitative data 161

6.3 Response rate for the survey (structured questionnaire) 162

6.3.1 Low response rate from participants in survey: in service teachers 164

6.4 Response rate for interview 165

6.5 Characteristics of the samples 171

6.5.1 Characteristics of the pre service teachers 171

6.5.2 Characteristics of the in service teachers 172

6.7 Descriptive analysis 175

6.7.1 Subject taken 175

6.7.2 Sources of information 176

6.8 Perceived conceptions of giftedness and talent: A descriptive analysis 177

Summary of descriptive analysis 199

6.9 Conclusion 199

CHAPTER 7: FINDINGS OF MAIN STUDY - QUANTITATIVE (PART B) 201

7.1 Introduction 201

7.2 Measurement of Pre service and In service teachers' conception of giftedness and talent 201

7.3 Principal Component Analysis (PCA) technique 202

7.3.1 Principal Component Analysis (PCA): Pilot study 203

7.3.2 Principal Component Analysis (PCA): Main study 205
7.3.3 Rationale for three tiers of PCA: A single group analysis 209
7.3.3.1 First analysis: Principal Component Analysis with no component suppression 210
Summary 216
7.3.3.2 Second analysis: Principal Component Analysis with suppression to 10 proposed components 216
Summary 224
7.3.3.3 Third analysis: Principal Component Analysis with suppression to six-components based on Parallel Analysis comparison 225
Summary 232

7.4 Independent t-tests **237**
Summary 245

7.5 Conclusion **245**

CHAPTER 8: FINDINGS OF MAIN STUDY - QUALITATIVE (PART C) 246

8.1 Introduction **246**

8.2 Research question no. 1: What is the conception of giftedness and talent among pre service and in service teachers in Malaysia? **246**
8.2.1 Who are gifted individuals? What are the characteristics of gifted individuals?: An exploration 247
8.2.2 Who are talented individuals? What are the characteristics of talented individuals?: An exploration 257
Summary (for Section 8.2.1 and 8.2.2) 260

8.3 Research question no. 2: Is there any difference in the conception of giftedness and talent among pre service and in service teachers in Malaysia? **261**
8.3.1 Differences between gifted and talented individuals: An explorative comparison 261
Summary 264

8.4 Research question no. 3: How do Malaysian pre service and in service teachers arrive at the conceptions of giftedness and talent? **265**

a) What are the sources of information about giftedness according to them? **265**

b) How adequate the information in helping them to understand the concepts and issues related to giftedness? **265**
8.4.1 Sources of information about gifted and talented: Where and how adequate the information from various sources? 265
8.4.2 Adequacy of information from stated sources 266

Summary 268

8.5 Research question no. 4: Do pre service and in service teachers confident in identifying students as gifted and talented? **268**

8.5.1 Confidence: A general exploration 268

Summary 271

8.6 Research question no. 5: How aware do pre service and in service teachers about identification mechanism in identifying gifted and talented students? **272**

8.6.1 Knowledge and awareness of various assessments: An unexpected discovery 272

Summary 274

8.7 Research question no. 6: How do pre service and in service teachers perceive these issues: **275**

8.7.1 Issues that perceived as intriguing related to gifted and talented individuals 275

Summary 277

8.7.2 Adequacy of teacher's training 278

Summary 281

8.7.3 Labelling and its importance 281

Summary 285

8.7.4 Elements that perceived as important in developing gifted education in Malaysia 285

Summary 289

8.8 Conclusion **290**

CHAPTER 9: SUMMARY AND CONCLUSIONS TO THE STUDY 292

9.1 Introduction **292**

9.2 Summary and rationale of the study **292**

9.3 Overview of research methodology **294**

9.4 Overview of quantitative and qualitative findings: Implicit notions of giftedness and talent **295**

9.4.1 Research question no. 1: What is the conception of giftedness and talent (as held by pre service and in service primary school teachers)? 296

9.4.2 Research question no. 2: Is there any difference in the conception of giftedness and talent among pre service and in service teachers in Malaysia? 301

9.4.3 Research question no. 3: How do Malaysian pre service and in service teachers arrive at their conceptions of giftedness and talent? 310

a) What are the sources of information about giftedness according to them? 310

b) How adequate the information in helping them to understand the concepts and issues related to giftedness? 310

9.4.4 Research question no. 4: Are pre service and in service teachers confident in identifying students as gifted and talented? 311

9.4.5 Research question no. 5: How aware do pre service and in service teachers about identification mechanism in identifying gifted and talented students? 312

9.4.6 Research question no. 6: How do pre service and in service teachers perceive these issues: 313

a) Intriguing aspects about gifted and talented individuals? 313

b) Adequacy of teaching training? 313

c) Labelling? 313

d) Important aspects in developing gifted education in Malaysia? 313

9.5 Limitations **316**

9.6 Implications **318**

9.6.1 Reference for future studies 319

9.6.2 Educational policy and practice 320

9.7 A final thought **322**

APPENDICES **323**

REFERENCES **405**

Declaration

No material contained in the thesis has previously been submitted for a degree in this or any other university. The work is original, except where indicate by special reference in the text. Any views expressed in the dissertation are those of the author.

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Dedication

In memory of my late father who always challenged me with what I have learned formally

To my mother who stood by me when things are the hardest

To my dearest supervisor, Prof Steven Higgins for being the best supervisor one could ever have

To those who are still struggling in their PhD journey, you are almost there

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Abbreviations and Acronyms

CCFT	Cattell Culture Fair Intelligence Test
CD	Compact disk
CTY	Center for Talented Youth
DCSF	Department of Children, Schools and Families
DNCA	Department of National Culture and Arts
EPRD	Education Planning and Research Department
MoE	Ministry of Education
MRSM	Maktab Rendah Sains MARA
NAGTY	National Academy for Gifted and Talented Youth
NGO	Non-Government Agency
OfSTED	Office for Standards in Education, Children's Services and Skills
PD	Professional Development
PKPGB	Program Khas Pensiswazahan Guru Besar
PMR	Penilaian Menengah Rendah (*Lower Secondary Assessment*)
PPpN	Pusat PERMATApintar Negara
SES	Socioeconomic status
SFT	School Failure Tolerance
SPM	Sijil Pelajaran Malaysia (*Malaysian Certificate of Education*)
SRBCSS	Scale for Rating Behaviour of Superior Students
UKM	Universiti Kebangsaan Malaysia
UPSR	Ujian Penilaian Menengah Rendah (*Primary School Evaluation Test*)
WISC-R	Wechsler Intelligence Scale for Children-Revised

Lists of Figure

Figure 2.1	Gagné's Developmental Model of Natural Abilities	37
Figure 2.2	PERMATApintar Holistic Gifted Development Model	66
Figure 5.1	Research design phases	104
Figure 5.2	Perceived characteristics of gifted and talented	120
Figure 7.1	Scree plot	206
Figure 9.1	A summary of both findings (Differences and overlapping perceptions)	310

List of Tables

Table 2.1	Summary of models or theories of giftedness and talent according to time sequence	29
Table 3.1	Examples of assessments by students and others	60
Table 3.2	Perceptions of giftedness in different period in Thailand	74
Table 5.1	Summary of research questions, designs, instruments and analyses	98
Table 5.2	Summary of development for the pilot study	110
Table 5.3	Summary of phases in the main study	118
Table 5.4	Sample questions to explore perceived characteristics of gifted and talented in qualitative method –i.e. semi structured questionnaire and interview-	121
Table 5.5	Sample item to explore the sources of information about gifted and talented	123
Table 5.6	Sample items to explore the adequacy of information from various sources and efforts to search information about gifted and talented	123
Table 5.7	Sample items to explore the adequacy of information from various sources and efforts to search information about gifted and talented	125
Table 5.8	Sample items to explore pre service and in service teachers about their awareness and/or understanding of identifying gifted and talented students	126
Table 5.9	Sample items to explore intriguing issues posed by pre service and in service teachers about gifted and talented individuals	127
Table 5.10	Sample items to explore the adequacy of teaching training	129
Table 5.11	Sample items to explore pre service and in service teachers' views on labelling students as gifted and talented	130
Table 5.12	Sample items to explore important elements in developing gifted education in Malaysia	131
	Summary of phases in the main study	
Table 5.13	Advantages and disadvantages of questionnaire	132
Table 5.14	Advantages and disadvantages of interview	137
Table 5.15	Summary of types of validity	138
Table 5.16	Reliability statistics (Cronbach's Alpha coefficient)	143
Table 6.1	An optioned question for sources of information	150
Table 6.2	AgreeStat output	160

Table 6.3	Kappa statistic	161
Table 6.4	Response rate	163
Table 6.5	Summary of characteristics of pre service and in service teachers	171
Table 6.6	Total number of pre service teachers based on race	172
Table6.7	Total number of in service teachers based on race	174
Table 6.8	Characteristics of in service teachers	174
Table 6.9	Education level and race of in service teachers	174
Table 6.10	Subject taken	175
Table 6.11	Subject taken and education level of in service teachers	176
Table 6.12	Sources of information	177
Table 6.13	Summary of item specification	178
Table 6.14	Pre service and in service general conceptions of gifted and talented (Part I)	178
Table 6.15	Pre service and in service specific conceptions of gifted and talented (Part II)	186
Table 7.1	KMO and Bartlett's Test for pilot study	204
Table 7.2	KMO and Bartlett's Test (Main study)	206
Table 7.3	Comparison of eigenvalues from PCA and criterion values from parallel analysis	207
Table 7.4	Eigenvalues and variance explained for sixty components	207
Table 7.5	Loadings for thirteen components (First interpretation)	212
Table 7.6	Item with high loadings on the component no. 1 of the 13-component solution	214
Table 7.7	Item with high loadings on component no. 2 of the 13-component solution	214
Table 7.8	Item with high loadings on component no. 3 of the 13-component solution	215
Table 7.9	Item with high loadings on component no. 4 of the 13-component solution	215
Table 7.10	Loadings for ten proposed components (Second interpretation)	217
Table 7.11	Item with high loadings on component no. 1 of the 10-component solution	219
Table 7.12	Item with high loadings on component no. 2 of the 10-component solution	220
Table 7.13	Item loadings on component no. 3 of the 10-component solution	220
Table 7.14	Item loadings on component no. 4 of the 10-component solution	221

Table 7.15	Item loadings on component no. 5 of the 10-component solution	222
Table 7.16	Item loadings on component no. 6 of the 10-component solution	222
Table 7.17	Item loadings on component no. 7 of the 10-component solution	222
Table 7.18	Item loadings on component no. 8 of the 10-component solution	223
Table 7.19	Item loadings on component no. 9 of the 10-component solution	223
Table 7.20	Item loadings on component no. 10 of the 10-component solution	224
Table 7.21	Loadings for six components (Third interpretation)	225
Table 7.22	Item loadings on component no. 1 of the six-component solution	227
Table 7.23	Item loadings on component no. 2 of the six-component solution	228
Table 7.24	Item loadings on component no. 3 of the six-component solution	229
Table 7.25	Item loadings on component no. 4 of the six-component solution	230
Table 7.26	Item loadings on component no. 5 of the six-component solution	231
Table 7.27	Item loadings on component no. 6 of the six-component solution	232
Table 7.28	Conception of giftedness and talent by Malaysian pre service and in service teachers	236
Table 7.29	Independent t-test (Group type: Pre service and in service)	238
Table 7.30	Independent t-test for each item (In service and pre service teachers)	240
Table 7.31	Independent t-test (Gender)	243
Table 7.32	Independent t-test (Subject taken)	244
Table 8.1	Aspects perceived as important in developing gifted education in Malaysia	291
Table 9.1	A summary of findings in comparison to existing models or theories of giftedness	304
Table 9.2	A summary of various aspects understudy of two groups (Pre service and In service) – Qualitative findings	305
Table 9.3	A summary of quantitative and qualitative findings (specifically on the characteristics of giftedness) – A merged of quantitative and qualitative findings	306

Chapter 1: Introduction

1.1 Background of the study: Personal aspiration

Stories about gifted individuals in Malaysia are rare. Hence, when this happens, the media highlights this. This study was inspired by an eight year old boy math prodigy in 2006 (see Bernama, 2006; Koh, 2006; Norliza, 2006) that has the nation in awe thanks to the media. Around the time this made the headlines, I was teaching introductory educational psychology to undergraduates. One of the topics was on giftedness. While teaching the course, I wondered how the term giftedness was understood and perceived by my students with only a week of discussion. From the discussions, I noticed that they had different conceptions of giftedness. As a result, I gave them a formative assessment which contained these questions: what is giftedness?, how do you describe a gifted and talented individuals?, and please give an example of a gifted and talented individual and what is his/her special ability (please provide appropriate examples)? The descriptions of gifted and talented individuals from the students' responses were varied. Inadvertently, their responses have sparked my interest to explore the concepts of giftedness and talented in this thesis.

In addition, while teaching the students, I found that researches on giftedness especially doctoral researches based on Malaysian context are limited. One of the possible reasons for this could be due to the lack of education specification and/or provision for gifted and talented students in Malaysia (Phillipson et al., 2003). Such claim is difficult to dismiss because the Malaysian Education Act 1996 (2004) does not stipulate any education provision for gifted education. However, within the Malaysian Education Act, there is a provision for special education in which students with special needs are defined as

> *'pupils with visual impairment or hearing or with learning disabilities; special education programmes means a) a programme which is provided in special schools for pupils with visual impairment or hearing impairment; b) an integrated programme in regular schools for pupils with visual impairment or hearing impairment or with learning disabilities; and c) an inclusive education programme for pupils with special needs and who are able to attend normal classes together with normal pupils*' (2004, p. 135)

Thus, even if the gifted and talented children can be categorised as children with special needs, the education act does not include any provision for special education. However, in the same education act, there is a clause under section (4) in Part II of the Education Act 1996 which states

> *'in implementing the special education curriculum, teachers may modify the teaching and learning methods or techniques, the time for and sequence of activities, the subjects and the teaching aids in order to achieve the objectives and aims of special education'* (2004, p. 136)

Therefore, if gifted education can be categorised as special education, the clause has some bearing and may be used to aid any program for gifted and talented students in Malaysia. As a result, there have been various attempts to provide special programs for gifted and talented students despite the lack of education provision within the Malaysian Education Act 1996. An attempt to establish gifted program in Malaysia is well illustrated in another government document; the Development Education Blueprint 2006-2010 (EPRD, 2006a) (known as *Pelan Induk Pembangunan Pendidikan*) which states that it is the government's aim to establish special curriculum for gifted and talented students as well as arts and performing arts schools known as *Sekolah Seni*)[1].

Also, in line with this, the Ministry of Education (MoE) conducted a study[2] to explore the needs for gifted education in Malaysia (EPRD, 2006b). However, the findings are inconclusive because the study was based on the descriptive analysis such as frequency and means. Also, There are three identified limitations: a) specific characteristics of gifted and talented as perceived by participants, (b) assessments that are perceived as appropriate in identifying gifted and talented students and (c) the types of education provision for the gifted and talented students (EPRD, 2006b). In addition, when the study was conducted in late 2005, current programs for the gifted and talented known as *PERMATApintar*[3], *Permata*

[1] At the time of writing this thesis, there is only one arts school (*Sekolah Seni* Johor Bahru) in Malaysia. For details, refer to the school's blog at http://sekolahseni.blogspot.com/

[2] The participants in this study were secondary and tertiary students, secondary school teachers, academic staff in various higher education institutions -e.g. universities and colleges- as well as administrators in schools and state education department. For details, see EPRD (2006b).

[3] PERMATAPintar was launched in early 2009. For details, refer to Noriah et al. (2009).

Seni[4], *Permata Insan*[5] were not available just yet. However, it is worth to note that such programs are established due to the needs identified in the study by the Ministry of Education (MoE).

In addition, the recent movement in advocating such programs for gifted and talented students could be attributed to the active involvement of the wife of the current Prime Minister of Malaysia, Datin Paduka Seri Rosmah Mansor[6]. Needless to say that her involvement gives the extra nudge needed to increase public awareness on issues related to the needs of gifted and talented children and the importance of establishing gifted education in Malaysia. One of the immediate impacts of her involvement is with the establishment of gifted programs known as *PERMATApintar*, *Permata Seni* and *Permata Insan*. *PERMATApintar* is a special program for gifted and talented secondary students by Universiti Kebangsaan Malaysia (UKM) which was launched on 2nd March 2009 (UKM, 2009). The specialists responsible in the development of this program attended special courses at the Center for Talented Youth (CTY) John Hopkins University to gain experience from the specialists there. *PERMATApintar* is similar to a summer camp. The program runs annually for academically gifted and talented students identified through assessments known as UKM1, UKM2 and UKM3[7] (Rosadah et al., 2009; UKM, 2009). In this instance, it can be assumed that it is not a continuous program in which students can attend on a regular basis throughout the year.

In addition to *PERMATApintar*, *Permata Seni* is a program designed for artistically gifted students (specifically in music). This program is divided into two categories: *Permata Seni Koir* (for choir) and *Permata Seni Muzik* (for music) (Mariatul Qatiah, 2010). The government agencies which are primarily responsible to develop these two programs are the Department of National Culture and Arts (DNCA) and Istana Budaya (under the administration of the Ministry of Information, Communication and Culture). Another program in line with PERMATAp*intar*, is Permata Insan which was launched around the same time as Permata Seni

[4] PERMATA Seni was launched in early 2010. For details, refer to Mariatul Qatiah (2010).
[5] PERMATA Insan was launched in March 2010. For details, refer to Ainol Amriz (2010).
[6] Evidence of her active involvement could be seen as reported in various local newspapers and articles (for examples of articles, please refer to 2010c; 2010a; 2010b; Abu Yazid and Noriah, 2010; Ainol Amriz, 2010; Mariatul Qatiah, 2010; 2011)
[7] The UKM1 can be accessed through internet whereas UKM2 and UKM3 can be accessed through selected centres across Malaysia (UKM, 2009). According to Siti Fatimah et al. (2009) these assessments are adapted from WISC-R and Raven Matrices. In other words, the contents of the assessments from the original version of both assessments are adapted into computer assisted version assessments. For details, refer to Siti Fatimah et al. (2009) and UKM website: http://www.ukm.my/

(Ainol Amriz, 2010). In brief, even though the above programs are relatively new they are attempts to develop a more comprehensive gifted education in Malaysia.

Since these programs are relatively new, it is difficult to gauge the effectiveness and benefits on the participants. At present, programs for gifted and talented students are mainly conducted by government agencies hence it is to some extent controlled. There is a rise in the number of NGOs offering similar programs with varied activities for gifted and talented children supervised by specialists from the local universities especially UKM.

Basically, the discussion has illustrated that programs for gifted and talented students are a recent endeavour by the Malaysian government to provide appropriate education for the gifted and talented students. However, such attempts are not new and isolated. There were few attempts which are no longer in evidence. For example, in the 1960s, there was an accelerated learning program where students could skipped grades and thus completed their schooling earlier than the regulated duration (Abu Yazid and Noriah, 2010).

According to Abu Yazid and Noriah (2010) the program was discontinued in the 1980s due to adjustment problems faced by some participating students. A similar program[8] was reintroduced in the early 1990s, in which students who scored well in a special assessment in primary three (9 years old) could skip a year and move on to primary five (11 years old). However, it was terminated due to similar adjustment problems faced by the students. Approximately half the number of these students were found unable to obtain better grades in the Primary School Evaluation test (known as *Ujian Penilaian Sekolah Rendah* or *UPSR*) (EPRD, 2006b).

Other than the accelerated programs, during the 1980s there was a special program known as BAKA (*Projek BAKA)* (Omar, 1986; BAKA, 2010). From a personal communication with the

[8] From an informal interview with one of the teachers in this study, I was informed that some of the students in her school who skipped grades were not able to adjust with the demands academically and socially. She lamented that some of the teachers are also unprepared to deal with students who are different in terms of their age within a class. In this instance, to implement such acceleration program in the future demands preparation and readiness from various parties -i.e. students, teachers, school administrators and parents-.

former Vice Chancellor of University Malaya, Prof Ungku A. Aziz[9] (who gave his consent for the project to be run) (refer to **Appendix 1** for details), I found out that BAKA started after a discovery of a Malay boy named Hadafi in the early 80s (Hadijah, 2010a). From the BAKA official website, it can be summarised that this project began as a research by the University of Malaya's faculty of education in 1980. It started with the aim of developing a screening assessment for highly abled students. However, the aim then changed to provide educational program for students attending MARA junior science colleges.

As such, the BAKA project mainly geared toward enhancing students' abilities through its pull-out program. This program was conducted during school holidays or as or when requested by any MRSM principal. It was conducted in MARA junior science colleges[10] across Malaysia. However, it stopped a couple of years after its introduction due to unknown reasons. I managed to find one of the participants of the BAKA project. Through personal communication with one of the participants of BAKA project, I found out that one of the several activities in BAKA project was teaching the technique of mind mapping to its participants (Hadijah, 2010b).

Mind mapping is not a recent learning tool. It was developed by Tony Buzan in the 1970, see (Buzan, 1974; Buzan and Buzan, 1993; Buzan, 2002). Even though there are few studies to

[9] A story of a boy with extraordinary ability known as Hadafi was featured in one of the main newspapers in Malaysia in the early 80s. At that time, it was considered unusual for a child who could read fluently before entering preschool. Hadafi could read at the age of 4 and he was considered to have extraordinary ability. This notion has changed since then. Currently, it is common to find children as young as 3 years old and able to read fluently. This is due to the available educational activities in enhancing reading ability. However, BAKA was short lived and later became a commercialised privately run program. Since the program was pioneered by the late Dato' Azman Wan Chik back in the 80s, it is now run by his son and currently, BAKA Project is known as BAKAPREP. For details, refer to http://www.baka.com.my/.

[10] MARA junior science colleges (known as *Maktab Rendah Sains Mara* or *MRSM*) are government run boarding secondary schools in Malaysia. Currently, there are 41 MRSM in Malaysia (with additional five under construction). MARA junior science colleges are considered elite schools due to its reputation and stringent admission process. Admission in any MRSM requires good results in the national exam i.e. Primary School Evaluation Test (known as *Ujian Penilaian Sekolah Rendah or UPSR*) for Form 1 admission or Lower Secondary Assessment (known as *Penilaian Menengah Rendah* or PMR) for Form 4 admission. On top of this, applicants need to pass an entrance exam known as MRSM Entrance Tendency Test (or more known as *Ujian Kecenderungan Kemasukan MRSM* in Malay*).* Most MRSM follow the regulated academic progression i.e. five academic levels (Form 1 to Form 5) but in some MRSM, there is only either Form 1 to 3 (such as MRSM Muar, Johor) or Form 4 to 5 (such as MRSM Tun Ghafar Baba, Malacca). In addition to the stringent admission process, in maintaining their reputation as elite schools, students in these schools are expected to perform well in the Lower Secondary Assessment (known as *Penilaian Menengah Rendah* or PMR). Students who fail to achieve the minimum required scores of 6As with A in both science and math subjects will be expelled from MRSM and will have to continue their schooling in other day schools. For details, see http://www.mara.gov.my/home

assess the effectiveness of Buzan's mind mapping since its introduction (e.g. Entrekin, 1992; Mento et al., 1999; Brinkmann, 2003; Wickramasinghe et al., 2007) yet, mind mapping was used in BAKA project when it was established in 1980. However, since there is no study conducted to measure the effectiveness of mind mapping on the students involved in BAKA, the effect of mind mapping on those students is left unexplored.

Based on the above discussion, it could be summarised that gifted education in Malaysia is still at its infancy and there are a lot be to done to enhance its development. With regards to this, there is a need for various studies to explore the different aspects of gifted education to ensure its successful development in Malaysia. This study is an attempt to explore the concept of giftedness and talent amongst pre service and in service primary school teachers.

The next section explains further the purpose of this study.

1.2 Purpose of the study

The purpose of this study is divided into two parts (general and specific). In general, this study is to provide a glimpse into the conception of giftedness and talent as perceived by pre service and in service primary school teachers in Malaysia. Their preconceived notions of giftedness and talent are explored quantitatively and qualitatively, for this reason. Also, this study is designed to uncover the sources of information and its adequacy for the teachers to understand the notions of giftedness and talent.

Specifically, this study sets out to report selected issues related to the conceptions of giftedness and talent which are specifically explored. The issues explored in this study are: teachers' confidence in identifying gifted and talented students, their awareness on various assessments that can be used, and their view on matters that intrigue them about gifted and talented students, adequacy of teacher training, perceived importance and effects of labelling and aspects that they perceived as important in developing gifted education in Malaysia.

1.3 Significance of the study

To date, there is no agreement on the definitions of giftedness and talent among researchers. Yet, the agreement on the need to define giftedness and talent based on different cultural and social contexts renders the significance of this study. Even though this study is specifically to explore the conception of giftedness and talent from a specific group; pre service and in service primary school teachers, it presents a glimpse of the overall conception of giftedness and talent as perceived by Malaysian educators. The used of mixed method design in this study will allow the exploration of the conception of giftedness and talent both quantitatively and qualitatively. Thus, the findings from this study can provide both theoretical and practical implications for the direction of gifted education in general and teacher training in specific.

Furthermore, in the absence of a study into the conception of giftedness and talent among pre service and in service primary school teachers in Malaysia, this study is an attempt to resolve this matter. In addition, due to the limited studies conducted on giftedness and talent in Malaysia (Phillipson et al., 2003), this study is significant in which it contributes additional information on the field of giftedness and talent.

1.4 Rationale for research questions

Since, the conception of giftedness and talent is vast there are various issues and aspects of it that can be understudied. Thus, in this study, I constructed six research questions to guide my exploration on the conception of giftedness and talent (see **Chapter 5** for more discussion). The six research questions are:

1) What is the conception of gifted and talented among pre service and in service primary school teachers in Malaysia?
2) Is there any difference in the conception of gifted and talented as perceived by pre service and in service primary school teachers in Malaysia?
3) How do Malaysian pre service and in service primary school teachers arrive at the conceptions of gifted and talented?
    a. What are the sources of information about gifted and talented according to them (pre service and in service teachers)?

b. How adequate is the information (from various sources as stated by them) in helping them to understand issues related to gifted and talented?

4) Are primary school pre service and in service teachers confident in identifying students as gifted and talented?
5) How aware are pre service and in service teachers about identification mechanism in identifying students as gifted and talented?
6) How do pre service and in service teachers perceived about these issues:
   a. Intriguing matters about gifted and talented?
   b. Adequacy of teaching training?
   c. Labelling?
   d. Important aspects in developing gifted education in Malaysia?

1.5 Definition of key terms

Conception of giftedness and talent

Conception of giftedness and talent refers to people's perceptions, notion, understanding, or beliefs of giftedness and talent.

Gifted and talented[11]

Gifted and talented is defined variedly by various researchers or authors. For example, according to the Marland report (1971) gifted and talented individuals are defined as individuals who have excellent abilities that could be demonstrated through performance and/or achievement in specific domain(s). According to Sternberg and Zhang (1995), gifted and talented individuals are those with exceptional ability(s) in comparison to peers and able to demonstrate (or prove) the ability(s) through performance or production which are recognised and valued its benefits by society.

In addition, Gagné (2004) distinguished between the gifted and the talented. Gagné's (2004) proposition defines gifted as having natural extraordinary ability(s) whereas talented refers to individuals with 'systematically developed' ability(s) (p. 120). In this vein, it is not to say that there is two groups of individuals rather gifts are natural abilities that one are born with

[11] The term 'gifted and talented' is used synonymously throughout this thesis following propositions by Heller et al. (2000), Sternberg and Davidson (2005) and Heller (2010). In addition, the term 'gifted' might be used singly when appropriate but still carries the same meaning as 'gifted and talented'.

and talents are the natural abilities that one develop as a result of interaction with catalysts[12]. However, Gagné later revised his proposition in which the emphasis between gifted and talented is no longer on the types of ability (untrained or systematically developed) (Gagné, 2010a; Gagné, 2010b). His latest proposition suggested that there are two domains of natural abilities (mental and physical) which are the result of genotypic factors, catalysts (intrapersonal and environmental) as well as developmental process (which will determine how the natural abilities are developed). In summary, Gagné suggested that gifted and talented individuals are those whose exceptional natural abilities are developed and catalytically influenced and their ability(s) are comparable with peers. See **Chapter 2** for detail discussion.

In this study, a general definition of gifted and talented is adopted and thus gifted and talented refers to individuals with exceptional ability in a domain[13] or more than one domain in which demonstrated by excellence performance in respective field.

Pre service teachers

Pre service teachers refer to students who are undergoing teaching training programme in an institute of teacher education or university. In Malaysia, not all institutes of teacher education and universities offer bachelor programme in education. In this study, sampling is based on selected institutes and universities only (for details, see **Chapter 5 – Section 5.9**).

In service teachers

In service teachers refer to teachers who are teaching in schools. Currently, the qualifications of teachers teaching in primary schools vary. Most teachers with more than 20 years of teaching experience have at least a diploma in education. Only a small number of them have a degree in education. In recent years, most teachers with less than 20 years of teaching experience have at least a degree in education. For detailed description, please see **Chapter 5 – Section 5.9** and **Chapter 6 – Section 6.5**.

[12] According to Gagné (2010), there are two catalysts that would influence the development of one's natural ability(s): intrapersonal and environmental. Detail discussion is presented in **Chapter 2**.

[13] According to Csikszentmihalyi (1996) domain refers to the scope or type of ability that one might has whereas field refers to the social environment that provides the right conditions and resources for individuals to develop their ability domain. In this regards, what one has have to be valued and recognised by society and thus, it is changeable over time.

1.6 Structure of the thesis: An overview of chapters

I organised this thesis into nine chapters. In this chapter, I discussed my personal aspiration to embark on this study. Also, I highlighted the purpose and significance of the study prior to present the rationale for the research questions that set the boundary of this study. To conclude this chapter, definitions of key terms are presented.

In **Chapter 2, 3** and **4**, I present a chronological literature review of the relevant models or theories of giftedness. In **Chapter 2**, I mention selected models or theories of giftedness. The selection of the models and theories in this thesis is based on my own analysis of their relevance due to frequent referencing of particular models or theories of giftedness in various previous studies.

Chapter 3 presents a comparison of conceptions of giftedness and talent from selected countries and societies. This chapter is aimed to provide readers with the varied emphases on the characteristics of giftedness and talent from numerous studies which support the proposition that there is no consensus on the conceptions of giftedness and talent as proposed by various researchers. Even though there is no consensus, it is important to acknowledge the difference and similarity of emphases on the characteristics of giftedness and talent which are socially and culturally valued differently in various societies.

In **Chapter 4**, I disclose findings from various studies on the conceptions of giftedness and talent by teachers. The studies might solely involve pre service teachers, or in service teachers or both. With a wide range of participants involved in such studies, it is aimed to provide sufficient information on the broad and diverse conceptions of giftedness and talent as perceived by teachers.

In **Chapter 5,** I present the research methodology in detail. In this study, a mixed method design is used to answer research questions posed in this study. A detailed description of the phases of this study, research instruments and sampling is produced in this chapter. Also, a brief outline of methods for data analysis is shown at the end of this chapter.

Chapter 6 is the first chapter of my research findings. In this chapter, an overview of quantitative and qualitative analysis is highlighted. Also included is a brief analysis of the

response rate. The characteristics of participants are described in detail. In addition, this chapter illustrates the result of reliability testing for the quantitative instrument used in this study. Descriptive findings from quantitative data are also recorded in this chapter. Moreover, I have included the result of inter-rater reliability to test the reliability of coded themes.

In **Chapter 7**, findings from data are displayed. There are two analyses used to assess the quantitative data. First, Principal Component Analysis (PCA) is used to explore the pattern structures of the conceptions of giftedness and talent as perceived by teachers. Three PCAs are attempted to investigate the robustness of the pattern structures. Second, in order to investigate the differences between groups of participants, inferential statistics is used. The findings from the respective analyses are stated in sequence.

I put forward the qualitative findings in **Chapter 8**. This chapter is organised into several sections. Each section is based on a research question. The themes emerged from the data for each question is written in the sub-headings in which one sub-heading refers to a particular theme. This chapter is concluded with a brief reflection on the possible implications of the findings which will be discussed in details in **Chapter 9**.

Chapter 9 is the final chapter of this thesis. In this chapter, I summarise and review the rationale of the study. Also, this chapter carries an overview of the research methodology and a final overview of findings from both quantitative and qualitative data to reiterate the thesis. In this chapter, limitations of the study are discussed in details to highlight the scope of this study. Implications of the study are also raised. Last but not least, as a closure of this thesis I have expressed my final thought as the researcher of this study.

Chapter 2: Giftedness? What and how it is valued

2.1 Introduction

This chapter presents the first review of the conceptions of giftedness and talent. To begin with, a brief introduction of definitions of giftedness and challenges in finding the most coherent proposition of giftedness are presented first. It is followed with a historical review on the development of giftedness in psychological literature. In addition, this chapter also explores and examines conceptions of giftedness and talent and models or theories underlying them. Considering the varied conceptions of giftedness and talent from various models or theories, it is essential to review studies from various societies and countries to explore the differences and similarities of conceptions of giftedness and talent that might exist, which is presented in the next chapter (**Chapter 3**). Also, in relation to my own exploration of the conceptions of giftedness and talent, I shall present in **Chapter 4** findings from studies on the conceptions of giftedness and talent as perceived by teachers in different countries and societies. These three chapters are aimed to provide a basis as well as define the focus of study within which this study is located.

2.2 Giftedness: An initial literature exploration

At present state, there are limited studies on giftedness in Malaysia[14]. However, scenario in the western world presents different phenomenon. This can be shown through a simple search on the internet using keywords such as 'gifted' or 'giftedness' on Google Search, for example might result in about 321,000 possible links[15] (the search was made on 31 August 2010 using 'giftedness' as the keyword) to articles, books and papers on the giftedness and its related topics such as assessments as well as programs in gifted education in western

[14] To date, there is no study exploring the sources of information on the conceptions of giftedness that teachers refer to in Malaysia. In this study, it is attempted to briefly explore the sources of information that teachers refer to in understanding giftedness (as mentioned in **Section 1.2**). See **Section 1.1** and **Section 3.3** for more explanation on the current scenario in Malaysia related to gifted studies.

[15] There are approximately 2,020,000 possible links from a similar search using the keyword of 'giftedness' on 4 June 2012 on Goggle Search. From August 2010 to 4 June 2012, it shows that at least there are around 1,679,000 new links to articles, websites and any source with a keyword of 'giftedness'. With the increase of information on giftedness on daily basis, it is hard to resist the temptation to look at as many website to retrieve varied information about giftedness. In this regards, it might be hard to distinguish which web links could provide the accurate information about giftedness.

countries. From Durham University database, keywords such as 'gifted', 'talented' or 'giftedness' yield voluminous articles from e-journals as well as numerous books available in any of the campus library. Research related to giftedness could be found specifically in journals such as High Ability Studies, Learning and Individual Differences, Journal for the Education of the Gifted, Roeper Review and Gifted Child Quarterly. From my exploration, some journals are linked with an organisation that serves as an active advocator of gifted education. For example, a journal called High Ability Studies is published by the European Council for High Ability (ECHA)[16]. However, despite the extensive research on giftedness as exemplified in those journals, there is no agreement among experts in gifted education on the definitions and also conceptions of giftedness (Robinson and Clinkenbeard, 1998; Thompson and Oehlert, 2010).

2.3 Definitions: A review and challenges in finding the best proposition

From a dictionary of psychology, giftedness could be defined as 'possessing one or more specific talents or abilities of a high order' (Corsini, 1999, p. 415). Such a literal definition could be seen as emphasising two aspects. First, it emphasises the possession of an individual of one or more extraordinary ability(s). Second, it highlights the hierarchy of abilities that a gifted individual might possesses in which giftedness might be perceived as the highest level in the ability hierarchy. The second notion might be adapted by individuals and/or organisations such as Mensa in defining its membership.

In other words, organisations such as British Mensa or Malaysian Mensa ascribe to this hierarchical principle in selecting their membership. As an example, from British Mensa[17] or Malaysian Mensa[18] official websites, it is stated that the requirement for its membership is based on an IQ score in the top 2% of the population. In this instance, a population normative IQ score is taken into consideration by Mensa because it is acknowledged that each society might have different distribution of its population IQ scores.

[16] As an active advocator of gifted education specifically in European countries, ECHA organises an international conference biennially and also offers a diploma in gifted education. For more details, see ECHA official website http://www.echa.info

[17] British Mensa official website, http://www.mensa.org.uk/

[18] Malaysian Mensa official website, http://malaysian-mensa.org/

In addition, a hierarchical notion of ability serves as a cut-off point to determine an individual as having extraordinary ability(s). For example, in terms of intellectual ability, assessments such as IQ tests are used to measure one's intellectual ability because it is assumed that it is a better predictor than other measures such as behavioural checklist or portfolios in identifying gifted and talented individuals (Speirs and Finch 2006). In this instance, intellectual ability (one of the characteristics of giftedness) is emphasised in the process of identifying giftedness. However, giftedness can be thought of as a psychosocial construct as proposed by various researchers (e.g. Csikszentmihalyi and Robinson 1986; Sternberg and Zhang, 1995; Freeman, 2005) and thus, to rely on certain kinds of assessments as the means of identification of gifted might be inappropriate.

In this regards, with the proposition among researchers that giftedness is a psycho-social construct it is difficult to justify which model or theory might provide the best conceptions of giftedness and talent. Thus, despite my attempt to explore relevant literature about conceptions of giftedness and talent resulted in voluminous books and articles, yet I still could not find standardised conceptions of giftedness and talent. This is due to several possible reasons. One of the best explanations is provided by Ziegler and Heller (2000).

In this article by Ziegler and Heller (2000), they extrapolate three dimensions of difficulties in finding standardised conceptions of giftedness and talent. The three dimensions are: a) empirical, b) ontological and c) meta-theoretical. In their first empirical proposition, it is proposed that it is difficult to find conceptions of giftedness and talent because empirical evidence from one study about gifted individuals may not be generalised to another gifted individual who has different level of giftedness. Also, in terms of identifying gifted individuals, there is an inadequacy of identification methods. It is not to say that there is no psychometric assessment could be used for identification purpose such as IQ tests, but rather giftedness is a multifaceted psychological construct. Therefore, to rely heavily on certain psychometric assessments such as IQ tests[19] could lead to misidentification of equally

[19] In general, one of the common practices of identifying gifted individuals is through looking at their rare gifts. In a study by McGuffog et al. (1987) on extreme case of giftedness, they suggested some characteristics of giftedness that could serve as indicators of giftedness are: receptive language, extraordinary memory, ahead of peers and special knowledge (domain specific of ability).

gifted individuals who did not get high scores in an IQ test (Sternberg, 1986; Pfeiffer and Blei, 2000; Borland, 2009).

In their ontological explanation, Ziegler and Heller (2000) claim that in clarifying conceptions of giftedness and talent, to limit explanation of giftedness based on a particular construct would lead to difficulty in determining the causal relation between gifts and natural predispositions. Even with the advancement of scientific methods and technology, it is difficult to determine the causal relationship of the multifaceted aspects of giftedness. In this vein, it is hypothesised that to determine various components of giftedness based on empirical evidence solely would not be an easy task. This brings to the third dimensions that they proposed namely the meta-theoretical dimension that explains the difficulty of finding conceptions of giftedness and talent.

Zeigler and Heller (2000) also postulate that reliance for empirical evidence on giftedness might lead to endless debates. For instance, if a gifted individual is perceived based on his or her academic achievement, therefore an academically high achiever is perceived as gifted. Following this as a principle in explaining giftedness, then for someone who is not a high achiever might be easily disregarded as not being gifted, even though he or she is could be highly gifted in music, for instance. In this instance, a conception of giftedness and talent could never be simplified by following such proposition.

Also, there is a danger in finding conceptions of giftedness and talent based on a meta-theoretical perspective in which it might make a concept related to giftedness hard to refute, such as intelligence. For instance, it is commonly regarded that intelligence to some extent influences learning, understanding and performing a task, yet when it comes to explain excellent performance, intelligence may not be perceived as the sole explanation for an excellent performance. For instance, according to Treffert (2006) in a case of individuals with Savant syndrome, IQ scores which indicate certain level of general intelligence could not explain excellent performance by those individuals.

In addition, Ziegler and Heller (2000) also claim that scientific research about gifted individuals is not always methodologically appropriate to find evidence of giftedness. In their article, they exemplified this through investigation of research undertaken on

giftedness which has been published in peer-reviewed journals. They argue that in a substantial number of cases, the number and nature of participants was not mentioned and thus, it would be difficult to generalise or compare findings with other research.

2.4 Conceptions of giftedness and talent: A historical glimpse

Conceptions of giftedness and talent perhaps could be traced back as far as the history of human kind goes. However, in this study, a historical review of the development of conceptions of giftedness and talent will be confined only from three pioneering propositions: Galton's (1869) works, Terman's and others (Terman et al., 1947; Terman and Oden, 1959) longitudinal studies on gifted and talented individuals, as well as the Marland report (1971)[20] which have significantly influenced the development of models and theories of giftedness.

2.4.1 Galton's propositions of gifted individuals

Galton's book entitled 'Hereditary Genius' was first published in 1869 about his investigation of prominent individuals. He defined prominent individuals as having gifted ability (or abilities) that set them in '*a position that is attained by only 250 persons in each millions of men*' (Galton, 1869, p. 18). In his book, he proposed that giftedness is hereditary. Based on a genealogical study of prominent individuals, he claimed that environmental factors such as social advantages or disadvantages have little influence on the development of extraordinary natural abilities.

In his book, he investigated several professions of gifted individuals based on their family tree. Among the professions that he investigated were judges, politicians, war commanders, literary men, scientists, poets, musicians, painters, divines (individuals who are believed to have understanding of religious context and are perceived having divine guidance for religious ability), oarsmen (sportsmen) and scholars to exemplify and illustrate his proposition. Through collecting and analysing the lives of such individuals, Galton proposed

[20] The Marland report was one of the earliest US government official reports on the education of the gifted and talented in the US in 1971. It was led by S. P. Marland Jr. and thus, it is known as the Marland report taking from his name. In this report, findings from others studies were presented as supporting evidences. For detail, refer to Marland (1971).

that prominent individuals could be grouped into two groups based on their abilities; 1) physical ability (or features) for oarsmen and 2) intellectual ability for judges, statesmen, scientists, literary men, clergymen, musicians, painters and commanders. In this instance, it should be noted that Galton's exploration on biographical lives of eminent individuals might be seen as skewed or focused on certain group of individuals who belonged to a higher class of social hierarchy.

Galton (1869) also proposed that abilities could be categorised in different levels and the highest level is known as the eminent and not all gifted individuals might reach to the level of eminence. This assumption is based on the '*law of deviation from average*' (Galton, 1869, p. 306). Based on his investigation of more than a thousand gifted individuals, he concluded that gifted individuals are not only endowed with natural abilities but also special characteristics such as '*eagerness to work and power of working*' (Galton, 1869, p. 40). In this instance, to be gifted means that individuals need to have inheritable attributes that highly desirable in a society in order to be classified as gifted. This proposition advocates that educational provision play little role in developing one's ability and thus, one can hardly change his or her life's course because all depends on predisposed or predetermined natural abilities. Galton (1869) did not perceive giftedness as developmental but rather as a set of fixed attributes and thus, he believed that gifts would flourish naturally with limited environmental influence.

In addition, Galton (1869) also perceived that certain races had more superior ability as compared to others. In this case, he made a comparison between the Anglo-Saxon and Negro (a term that Galton used in his book to refer to people originated from the African continent). He also referred the African people by using derogatory term i.e. '*half-witted*' (Galton, 1869, p. 307). In this vein, it could be assumed that his biased proposition was posited based on his visits to Africa and his comparisons were heavily influenced by the prevalent social and cultural values.

However, despite his biased perspective, Galton's (1869) propositions[21] have undoubtedly influenced the focus and development of studies on giftedness in later years. Beineke (1987)

[21] Some researchers and authors considered him as a gifted individual and this could be seen from numerous writings about his life (e.g. Stigler, 1989; Fancher, 1998; Gilham, 2001; Blumer, 2003).

in his article claimed that Galton was an important figure in pioneering studies on giftedness and gifted education. Such claim is resulted from recognition of Galton's numerous works in relation to the idea of genetic influence on giftedness which was widely accepted during the early period of 19th century.

Undoubtedly, Galton's ideas and propositions were also read by other prominent researchers in the field of giftedness such as Terman (1917) as found in one of his earliest studies on intellectual ability. Galton's works also have influenced other researchers in various fields such as eugenics (Hellyer Corning, 1973), personality (Rushton, 1990; Eysenck, 2006) and psychometrics assessment and statistics (De Marrais, 1974; Stigler, 1986; Rodgers and Nicewander, 1988; Stigler, 1989). In addition, Galton's view on the hereditary aspects of human nature also contributes to the nature-nurture debate (Cowan, 1977).

2.4.2 Terman's longitudinal study on giftedness

Terman began his investigation of giftedness in 1905. Terman's (1905) paper concentrated on the discussion of precocity and pre-maturation in relation to giftedness which was primarily based on others' works or studies, not from his personal research. This could be seen from his use of varied sources to strengthen his supposition as stated in this particular article (for details refer to Terman, 1905) Nevertheless, it could be said that from his review of other works as seen in this particular article, his interest in exploring the aspects that influence the development of gifted individuals until adulthood was deepen and resulted in his longitudinal study of gifted individuals which lasted for more than 50 years (for details, see Friedman et al., 1995; Friedman and Martin, 2011).

In addition, prior to his longitudinal study, Terman is similar to Galton in which he used biographical analysis[22] as a means to explore giftedness (for details, refer to Galton, 1869; Terman, 1917). However, instead of using historical accounts of prominent individuals, Terman (1917) focused on Galton's life. Terman's decision to use Galton as his subject was

[22] Other than biography analysis, a case is also used as a research approach to study gifted individuals. (Garrison et al., 1917; Coy, 1918; Hollingworth et al., 1922). Unlike Terman's longitudinal study, (Terman, 1917; Terman et al., 1947; Terman and Oden, 1959), Garrison et al. (1917), Coy's (1918) and Hollingworth's (1922) studies focused on a specific gifted individual's life only and thus, their findings were limited to some extent and could not be easily generalised to others. See **Appendix 2** for a summary of Garrison et al. (1917), Coy's (1918) and Hollingworth's (1922) studies.

influenced by assumptions about Galton's widely acclaimed contributions in science. Using Galton as an example of gifted individuals who thrived until adulthood, Terman embarked on the longitudinal study of gifted children later on as an alternative to study gifted individuals other than using biographical analysis (see examples of studies by Terman, 1922; Terman et al., 1947; Terman and Oden, 1959).

When Terman started his longitudinal study in 1922, there was a general assumption about gifted individuals based on well-known two child prodigies, Norbert Weiner[23] and William Sidis[24]. Based on these two lives as examples of gifted individuals, Terman (1922) contended that through environmental influence (especially parents as seen in both individuals), 'it is possible to make any child a prodigy' (p. 33). The emphasis on environmental factors that influence giftedness could be seen as an attempt to provide a different supposition that was not recognised by previous works such as by Galton. However, his proposition could be seen as rather idealistic and are not empirically based.

Nevertheless, when he began his longitudinal study, there were more males than females involved (Terman, 1922). In this study, all of his participants had skipped grades at some point in their schooling and among the variables explored were race, socioeconomic status (SES), parents' education levels, physical traits such as weight and height as well as social adaptability. In the same article, Terman (1922) also mentioned the findings of his investigation about parents' and teachers' perceptions of the gifted children. Their perceptions were categorised into five aspects: intellectual, volitional, social, emotional and psychophysical. Also, in this study it was dicsovered that parents and teachers had similarly high perceptions especially about the intellectual and volitional aspects of the gifted students (Terman, 1922).

To identify his participants, Terman (1922) used the revised Binet IQ test known as the Stanford-Binet IQ test as the identification assessment. It could be said that he popularised

[23] For details illustration of Norbert Weiner's life, see his autobiography book entitled 'Ex-prodigy: My childhood and youth' (Weiner, 1953). He grew up around the same time with Sidis and thus, their lives might be compared constantly in many instances such as in Montour's article (1977).

[24] A description of William J. Sidis's life was written in an article by Montour (1977). In Montour's article, illustration on media notoriety excavated social misconception about gifted individuals who are more prone to psychological disorders using Sidis's life as a major example. Her article was aim to clear up misconceptions on Sidis through instances of other prodigies who thrived until late adulthood.

the use of intelligence test as a means to identify gifted and talented individuals. However, this was not what had Binet proposed when he developed the IQ test. According to Fancher (1998), Alfred Binet originally did not create his test as a tool to identify gifted and talented individuals. Fancher (1998) further explained that the creation of Binet IQ test resulted from an educational policy that required children with low levels of attainment (who were more prominently referred to as mentally handicapped during that time) to be sent to school. In order to distinguish children with mental disorders, the Binet IQ test was used. Also, Fancher (1998) noted that Binet never quantified intelligence in terms of cognitive levels. This is because Binet believed that children could develop their potential through training even though they might have some psychological problem or disorder.

Arguably, despite Binet's stand with regards to the use of his test as explained by Fancher (1998), the use of IQ tests as one of the prominent approaches in identifying gifted and talented students in later years was supported by compelling evidences from Terman's longitudinal study which to some extent has shown that his method using IQ tests was able to identify gifted and talented individuals and then supported in latter studies (e.g. Janos, 1987; Friedman et al., 1995; Friedman and Martin, 2011)[25]. Perhaps due to this, IQ tests are still used as one of the ways to identify gifted and talented individual by organisation such as Mensa (see **Section 2.3** for more discussion on this). In this instance, IQ tests are also seen as able to provide an instant way to identify gifted and talented. Some researchers like Treffinger and Renzulli (1986) and Sternberg and Grigorenko (2002) argue that IQ tests are meant to measure intelligence and thus, cannot be relied solely for the purpose of assessing giftedness because other characteristics such as precociousness or creativity might be left unmeasured.

[25] In Janos's (1987) comparative study of the 19 participants in Terman's study with others with similar age and IQ on their academic and career progress and psychological adjustment, it was found that Terman's participants 'earned higher grades, more academic honours and participate in more extracurricular activiti es' (jJanos, 1987, p. 55). However, Janos contends that the social support (in terms of mentorship) that Terman's participants received from Terman especially to certain extent might influence any difference that exists between Terman's group and his own comparison group. In various studies, it was found that mentorship is one of the social supports that might influence the life course of gifted and talented individuals (Kaufman et al., 1986; Pleiss and Feldhusen, 1995; Hébert and Olenchak, 2000). In a study by Friedman et al. (1995) archival data were used to follow up Terman's cohort in order to assess the longevity and cause of death among Terman's cohort. In Friedman et al. (1995) study, even though Terman cohort were 'bright, well-educated group integrated into American society, (but none of grew up to win a Nobel prize or to be identified as an obvious genius)' (p. 70) yet, it was found that the causes of longevity and premature death among the Termites (a term used to refer to Terman's cohort) remain unclear.

In a study by Sternberg and Grigorenko (2002) it was found that using assessment such as IQ tests might lead to misidentification of gifted students with learning disabilities. They assert that each assessment such as IQ tests are meant for testing specific skill -i.e. intelligence- and thus, using such assessments to test other skills such as reading skills or other nonverbal skills is inappropriate. In this instance, gifted students with learning disabilities might not only be misidentified but also, might be assigned to inappropriate educational provision.

Regardless of these criticisms of Terman's work, it could be said that Terman's studies were among the first extensive studies on giftedness. One of the main findings in his studies was gifted children that were identified in his study were relatively more outstanding than peers in general in terms of health, social status, income and life satisfaction (for details, please refer to various studies by Terman, 1922; Terman et al., 1947; Terman 1954; Terman and Oden, 1959).

Some researchers like Passow (1981) and Friedman and Martin (2011) contend that Terman's longitudinal study has helped to dismiss the popular belief (at that time) that gifted children would not thrive in adulthood. In this instance, even though their studies support Terman's findings in relation to the proposition that gifted children could thrive in adulthood, yet other studies have found that gifted and talented individuals are like other individuals in which they are not immune to any psychological disorders such as depression (DeLisle, 1986; Tomlinson-Keasey et al., 1986; Cook et al., 1996; Cross et al., 2002; Cross et al., 2006).

For instance, in a study by Cross et al. (2002) on a gifted individual who completed suicide [26], it was found that in general there is no difference between a gifted and talented individual compared with a non-gifted individual in terms of any suicidal behaviours that they might express. In this vein, such findings show that giftedness does not provide immunity from having depression which might hinder gifted and talented individuals from functioning and contributing beneficially towards the society.

[26] This study by Cross et al. (2002) is unique in which it is based on a psychological autopsy of a gifted individual for the duration of 21 years of his life. In this study, it was found that some of his aberrant behaviour which at some point was regarded as extraordinary behaviour (typical for a gifted individual) instead of indicators for suicidal behaviour by individuals such as his friends and parents. Due to these misinterpretations of his suicidal behaviour, he completed suicide after several unsuccessful suicide attempts. This study was compared with the findings for previous study by Cook et al. (1996).

2.4.3 The Marland Report (1971)

Apart from longitudinal studies as Terman, giftedness can also be understood from definitions as proposed in official reports like the Marland report (1971). The Marland report can be considered as setting a standard for the definitions of giftedness as used in a wide range of research, though mainly in the US. By looking at a citation index for the Marland report (1971), it could be concluded that it has had a significant impact[27]. Certainly the various conceptions of gifted and talented as proposed by American researchers[28] in recent years can be regarded to be influenced by this official document. In the Marland report (1971, p. 8) it states that:

> *'Gifted and talented children are those identified by professionally qualified persons who by virtue of outstanding abilities are capable of high performance. These are children who require differentiated educational programs and/or services beyond those normally provided by the regular school program in order to realize their contribution to self and society. Children capable of high performance include those with demonstrated achievement and/or potential ability in any of the following areas, singly or in combination:*
>
> 1. *general intellectual ability*
> 2. *specific academic aptitude*
> 3. *creative or productive thinking*
> 4. *leadership ability*
> 5. *visual and performing arts*
> 6. *psychomotor ability'*

From the Marland report, there are four aspects were highlighted and should be looked at closely:

[27] There are more than two hundred articles and books (254 citations) have cited the Marland Report (1971) from a search using ERIC (Education Resources Information Center) database on 12 April 2011. However, none of the articles are from the past fifteen years. As examples, among researchers that have cited the Marland Report (1971) in their articles are Alexander (1981), Benbow and Stanley (1996) and Passow (1994).

[28] An example of such researchers is Joseph S. Renzulli who was also one of the panel members that involved in the preparation of this report. A close examination on his three-ring theory of giftedness (Renzulli, 1978) reveals a resemblance of emphasis on some of the characteristics of giftedness as presented in the Marland Report. For more details, see Marland (1971) and Renzulli (1978).

- who are considered to be gifted and talented
- how the gifted and talented are identified (types of assessment used to identify and when is the best or most appropriate age for identification[29])
- who are experts in identifying them and
- what are the education provision could be provided by the gifted and talented (which include the questions of how the special programs be implemented and by whom (e.g. teachers, parents etc.)

Summary

Looking at these three sources, Galton's (1869) work, Terman's (Terman, 1922; Terman and Oden, 1959) longitudinal study and the Marland report (1971), it can be summarised that each source emphasises aspects of giftedness differently. To recap, Galton's main proposition is on inheritable aspect of extraordinary abilities[30] based on his biographical exploration on eminent individuals and their family backgrounds. His assumption was popular to a certain extent because it highlights the existence of social hierarchy as well as racial difference (based on his comparison of the Anglo-Saxon and African). In this regards, Galton's proposition could be concluded as too simplistic in which genetic predisposition is invoked primarily to describe extraordinary traits of giftedness and talent. Familial and racial comparisons as provided by Galton can be seen as his attempt to justify his assumptions about giftedness and talent.

[29] In the Marland Report, it was stated that the identification assessments in the US were 'piecemeal, sporadic and sometimes nonexistent' (Marland, 1971, p. 42). In this vein, there was no standardized approach in identifying gifted and talented children when the report was made. To date, even though the definitions of giftedness has changed to certain extent, the identification assessments for gifted and talented have not changed much in the US in which the most commonly types of assessments used are standardised tests such as intelligence tests, aptitudes and interests tests and achievement tests (Sternberg et al., 2011). Such tests might be effective in identifying gifted and talented children to certain extent, but in some cases, such tests are used as a confirmation tool of initial or informal identification. According to Winner (1996) gifted and talented children are often precocious at early age. In her book, she described an example of a precocious boy whose interest in numbers was detected at the age of a year and half. His parents were aware of his precociousness at early age but they waited few years before confirming their child IQ level using IQ tests because the boy might be too young to be tested for any standardised test at such age.

[30] Even though, recent theorists such as Gagné (2010a) includes genetic aspects in his model, yet there is no proposition which strongly emphasises on the influence of genetic and/or familial trait on giftedness and talent as Galton (1869) did. To some extent, the relation between genetic endowment and giftedness is hard to be dismissed yet it is much harder to determine *how (or to what extent)* genetics influence on giftedness especially on the development aspects. See Baker (2007) for more detail on the debate of nature and nurture on expert performance.

If Galton's emphasis is on heritability traits of giftedness, Terman's emphasis is on environmental influence on giftedness. One of his aims in conducting a longitudinal study of gifted and talented individuals was to uncover environmental variables that might influence later achievement of gifted and talented without understating genetic influence. This could be seen through his works using a similar method to Galton's study through biographical analysis (e.g. Terman, 1917) as well as other methods like a case study (e.g. Terman and Fenton, 1921) and later, longitudinal study (Terman et al., 1947; Terman and Oden, 1959) to investigate various aspects that influence the lives of gifted and talented individuals. In summary, Terman's works[31] are influential in these two aspects: a) how giftedness and talent is *studied* using empirical methods and particularly longitudinal study and (b) how gifted and talented individuals could be *identified* using psychometric assessments such as Stanford-Binet IQ test.

From this analysis of Galton's and Terman's works, it is worth noting that Galton and Terman did not provide any specific definition of giftedness regardless of their contributions in the field. In contrast, the Marland report provided a definitional guideline of giftedness and talent. The emphasis in the Marland report as well as its influence on later propositions could be summarised as follow:

- Identification of gifted and talented children should be carried out by experts (who were referred to as 'professionally qualified persons').
- 'Outstanding abilities' is one of the main characteristics of giftedness and talent. Even though, other terms like 'above average ability' (Renzulli, 1978) or 'excellence' (Sternberg and Zhang, 1995) are used by different theorists, yet it carries similar meaning.
- Outstanding abilities are proposed to be exhibited or demonstrated in any or more than one domain of abilities. The proposition in the Marland report is similar with

[31] Unlike Galton, Terman's longitudinal study could be regarded as empirical. From his works, he highlighted one of the characteristics of giftedness, intelligence, (which Galton did not proposed specifically) as well as the use of psychometric measurements in identifying gifted and talented rather than relying on biographical accounts (in this case, Terman specifically used Binet's IQ test which he revised which became known as the Stanford -Binet IQ test).

propositions by later theorists such as Sternberg and Zhang (1995)[32] and Gardner[33] (1983).

- Differentiation of education provision is highlighted with the aims of enhancing one's abilities.
- 'Self and social contribution' is emphasised too. In this vein, it is perceived that having a special ability entails responsibilities towards self as well as society. This proposition also could be assumed setting the direction of propositions in recent models or theories of giftedness. As an example, one of the emphases by Renzulli (2005) is on creative production that leaves an impact on society or culture where gifts or talents are recognised and valued.

However, there is some common ground from these three key sources that is hard dismiss in which giftedness is equated with having extraordinary ability(s) by individuals who can perform excellently[34] and have outstanding IQ scores[35]. This basic proposition can also be found in recent models or theories of giftedness and talent which I shall present in the next section (**Section 2.5**).

In terms of conceptions of and research methodology used to study giftedness, Galton and Terman could be considered among the earliest pioneers[36] on the study of giftedness. In recent years, even though study of giftedness is considered as still in '*prepositivistic*' state

[32] Sternberg and Zhang (1995) used the term 'demonstrability' as an indicator of giftedness and talent in their model known as Pentagonal Implicit Theory of Giftedness. For details, refer to **Section 2.5** of this chapter for more illustration.

[33] Gardner's (1983) model of multiple intelligences is one of the examples of categorisation of abilities in specific domain. In this regards, instead of referring the domain to subjects specific like mathematics or science, he presented a more generic concept of each domain. Further discussion is presented in **Section 2.5** of this chapter.

[34] This aspect is highlighted in the Marland report specifically. Galton and Terman did not make any clear proposition in this aspect. However, it is assumed that both did agree that excellence performance is one of the criteria of giftedness.

[35] Terman (1922) used the Stanford-Binet IQ test to identify gifted and talented for his longitudinal study. Thus, outstanding or high IQ scores were used an indicator of giftedness.

[36] Among the earliest methods used for gifted studies are biographical analysis (examples of studies are such as by Galton (1869) and Terman (1917) and a case study of a gifted and talented individual (examples of studies are such as by Garrison et al. (1917), Coy (1918) and Hollingworth et al. (1922). Even though Terman was among the first using longitudinal study on gifted and talented individuals, there are recent studies using longitudinal studies as well such as by Lubinski et al. (2001) on profoundly gifted students, Shea et al. (2001) on spatial ability of talented youth, Cross et al. (2004) on psychological characteristics of gifted students who stayed in a residential academy, Wai et al. (2005) on the effects of creativity and its influence on occupational success and Ferriman et al. (2009) on work preferences, life values and personal views of gifted students.

due to heavy reliance on studies which are '*theoretically unsound and poorly conducted*' (Cross and Cross, 2010, p. 229) yet empirical studies using methods such as Q-technique factor analysis, group non-equivalence and propensity score analysis might able to assist future researchers in exploring various topics of giftedness (McCoach, 2010).

In addition, the propositions found in Galton's writing, Terman's studies, or the Marland report, do not include specific characteristics that also might be found in individuals who have a psychological disability such as dyslexia or Asperger's Syndrome. Therefore, it is assumed that models or theories of giftedness and talent by various researchers might give alternative options in finding more comprehensive conceptions of giftedness. However, regardless of various theories about giftedness through the works of Renzulli (1978), Gardner (1983), Piechowski (1986), Piirto (1995), Sternberg and Zhang (1995) and Gagné (2004, 2010a) finding a comprehensive model or theory that best describe giftedness is a challenging effort.

2.5 Conceptions of giftedness and talent: Models or theories

As previously discussed in **Section 2.3**, regardless of the challenges as extrapolated by Ziegler and Heller (2000) in finding the best conceptions of giftedness and talent, in this chapter, a selection of models or theories proposed by various researchers in gifted education are discussed more extensively. In brief, looking at the historical review, it can be summarised that definitions of giftedness during the early 20th century concentrate on abilities that are considered as inherited, stable and measurable through performance or achievement. It is reflected through heavy reliance on assessments such as IQ tests as used in Terman's study (for details, see Terman, 1922). In this regards, the definitions of giftedness could be considered as simplistic or unidimensional during this particular era.

However, the way giftedness is defined at today has changed and the definitions of giftedness have become more comprehensive. The psychological literature from the last 30 years at least shows the development of the definitions of giftedness through various models or theories of giftedness. From the psychological literature, it can be concluded that all of the models or theories of giftedness have similar objectives in understanding this phenomenon called giftedness in these three main aspects:

- the definitions of giftedness
- ways to identify gifted and talented children or students
- education provision appropriate for the development of gifts or talents

However, given the fact that there are more than ten different conceptions of giftedness[37] (see **Table 2.1** for summary) that can offer varied illustrations of giftedness, it is therefore complex to synthesise the models without discounting any of the propositions, as previously attempted by Sternberg and Davidson (1986; 2005) and Sternberg et al. (2011). As an example, after reviewing the psychological literature and finding a variety of definitions of giftedness, Sternberg and Davidson (1986) categorised seventeen conceptions of giftedness into implicit and explicit viewpoints[38].

The categorisation of the seventeen conceptions into two categories is an attempt to maintain the uniqueness of each conception by Sternberg and Davidson (1986). Six models as listed by Sternberg and Davidson (1986) concentrate on people's intuitive view of giftedness and thus, those models are known as implicit approach conceptions. Sternberg and Davidson further proposed that implicit conceptions are conceptual and thus, it could not be tested empirically.

In contrast, in the explicit approach conceptions emphasise operational definitions and thus, it relies on '*a network of psychological or educational theory or data*' (Sternberg and Davidson, 1986, p. 3). They contend that any explicit conception of giftedness can therefore be tested and thus, falsified. In other words, explicit conceptions of giftedness are subject to empirical validation. A summary of these implicit and explicit conceptions as stated in Sternberg and Davidson (1986) and Sternberg et al. (2011) as well as several other conceptions are presented in **Appendix 3** and **4**.

[37] Based on my literature exploration on the available conceptions of gifted and talent, it was found that among more than 15 conceptions of giftedness and talent as described in Sternberg and Davidson (1986; 2005) only 11 conceptions are stated or named clearly as 'model' or theory (see **Table 2.1**). However, even though the rest of the conceptions do not provide any specific structure of a model or theory, yet other conceptions of giftedness and talent provide definitions of giftedness or descriptions of gifted behaviours exhibited by gifted and talented individuals (e.g. Tannenbaum, 1983; Feldhusen, 1986; Winner, 1996).

[38] Both implicit and explicit approaches of giftedness are important in their own right because each provides a dimension that complements the understanding of giftedness. In a way, as Sternberg and Zhang (1995) assert, 'implicit theories provide the form or structure by which we define giftedness; explicit theories provide the content that is embedded within that form' (p. 89). For details, see more in Sternberg (Sternberg, 1985b) and Sternberg and Zhang (1995).

In summary, in this chapter, with eleven diverse models or theories of giftedness identified (see **Table 2.1**), a rationale for their analysis is required. Accordingly the essential highlights of these selected models of giftedness are presented in this chapter classified according to broad categories[39] in the conceptions of giftedness and talent: a) generic abilities, b) characteristics of giftedness, and c) specific dimensions (classifications of ability domain). A brief description of each clustering is presented prior to a more detailed description of each model or theory of giftedness under each framework.

[39] Varied models or theories of giftedness are clustered together according to commonality of propositions highlighted in each model. In this vein, there are overlapping similarities share by two or more models or theories they are in one clustered in one framework. In other words, the propositions from each model or theory are not mutually exclusive.

Table 2.1: Summary of models or theories of giftedness and talent according to time sequence

Model / theory	Year	Key points
Three-ring conceptions of giftedness (Renzulli, 1978)	1978	- Three components of giftedness: above average ability, creativity and task commitment
Componential theory of intellectual giftedness (Sternberg, 1981)	1981	- Three components of mental processes: metacomponents, performance components and knowledge-acquisition components
Multiple intelligences (Gardner, 1983)	1983	- Eight (to date) types of intelligences: linguistic, musical, logical-mathematical, spatial, bodily kinaesthetic, intrapersonal, interpersonal and naturalistic intelligence - Context plays role on how each intelligence is valued
Differentiated model of giftedness and talent (later changed to Developmental model of natural abilities) (Gagné, 1985; Gagné, 1991; Gagné, 1995; Gagné, 1998; Gagné, 2000; Gagné, 2004; Gagné, 2010a; Gagné, 2010b)	1985 - 2010	- Giftedness is resulted from interplay of various components: internal, external and developmental process - Ability could be divided into two domains: mental and physical domain
Triarchic theory of intelligence (Sternberg 1985a)	1985	- Three intelligence components: componential, experiential and contextual
4x4 model of the structure of giftedness (Milgram and Hong, 1994)	1991	- Giftedness is categorised into two: general and specific intellectual abilities - The abilities could be classified into four levels (profoundly gifted, moderately gifted, mildly gifted and nongifted) - Environment (home, school and community) plays roles in the development of abilities
Munich model of giftedness (Perleth and Heller, 1994; Heller and Schofield, 2008; Heller, 2010)	1994 - 2010	- Five domains of giftedness: intellectual, creative, social, musical and psychomotor - Noncognitive traits and social aspects serve as mediators between ability and achievement
Pentagonal implicit theory of giftedness (Sternberg and Zhang, 1995; Zhang and Sternberg, 1998)	1995	- Five components of giftedness: excellence, rarity, demonstrability, productivity and value
Pyramidal of talent development (Piirto, 1995)	1995	- Highlights two aspects of talent development: internal and external o **internal aspects**: personality attributes, minimum intellectual competencies and ability domains o **external aspects**: home, school, community/ culture, gender, genes and chance - Internal and external aspects are interrelated - IQ level relates to domain specific of ability (e.g. math relates to high IQ, arts relates to average IQ level)
Actiotape model of giftedness (Ziegler, 2005)	2005	- Three main components in this model: Actiotope (individual), biotope (environment) and actions - The interaction among components are aimed not only for equilibrium but also for development (modification, transformation etc. of ability)
Emergenic-epigenetic model of giftedness (Simonton, 2005)	2005	- **Emergenic:** Gifts/talents are perceived as innate traits that develop gradually and thus, various factors might support or hinder talent development - **Epigenetic**: Giftedness is not a stable trait (it is developmental and thus, it could be either flourish or diminish / vanish in later years)

2.5.1 Frameworks that concentrate on generic propositions

There are four models or theories of giftedness under this framework grouping. All four frameworks highlight multidimensional interrelated components of giftedness in general. The components could be multilayered as could be seen in Piirto's (1995) pyramidal model or typological as in Gagné's (1985; 1991; 1995; 2000; 2004; 2010a and 2010b) model and Heller's (1994; 2010) Munich model of giftedness. Theorists of these frameworks attempted to present a holistic model of giftedness without directly specifying any dimension of ability or characteristics of giftedness. The components in each model or theory could be said as all-encompassing and thus, flexible enough to certain extent to be interpreted by practitioners like teachers or school administrators.

2.5.1.1 Pyramidal talent development (Piirto, 1995)

A pyramidal framework of talent development as proposed by Piirto (1995) illustrates a complex interplay of components (internal and external) for one's talent development. The emphases of Piirto's proposition could be summarised as follow:

- The pyramidal framework of talent development does not specifically explain the characteristics of giftedness and talent yet in this framework; the concentration is on the wide possible interplay of components, both internal and external, that influence one's talent development.
- The internal components are influenced by the correspondence to external components.
- There are three layers of internal components involve in the talent development process: a) personality attributes (that serve as the base of the talent development), (b) minimum intellectual competencies, and (c) specific talents or domain of abilities (Piirto 1995). She later added another component, a genetic aspect, in 1999. From the illustration of her model, it can be concluded that Pirrto regards this component as the root or basis of all of the other components. See Piirto (1999) for details.
- Personality attributes are located at the bottom of this pyramidal framework. It comprises of wide array of personality attributes such as creativity,

perfectionism and such which are taken from empirical and qualitative studies. In this instance, it could be assumed that Piirto attempted to present a more generic model of giftedness.

- In this model, Piirto proposed that even though there is no specific minimum of IQ level to be used as a cut-off point of intellectual ability, yet as general rules, to be able to function for daily activities in everyday life, a minimum level of IQ is expected. In addition, Piirto claimed that to be identified as gifted and talented, high IQ is not the main indicator.
- Piirto proposed that IQ level relates to the domain ability. She illustrated this by giving examples of domains such as science, mathematics and linguistic which require high IQ for its realisation, whereas for domains like arts, sports, or religions do not require high IQ. In this sense, inadvertently through this differentiation, certain domains of ability which are associated with high level of IQ might be perceived hierarchically and perhaps more favourably than those domains associated with low level of IQ.
- Piirto's proposition provides a wide array of possible external influential factors on talent development. There are six influential components on talent development: a) home, (b) school, (c) community and culture, (d) gender, (e) genes and (f) chance.

Other than the pyramidal framework of talent development, Piirto (1995) also proposed the use of specific terms for reference or labelling based on a particular construct such as intelligence or creativity. As an example, Piirto claimed that if a gifted individual is identified based on high IQ scores, then he should be referred as 'a high IQ individual' instead of using a generic term such as 'a gifted individual'. In this instance, Piirto's proposition could be considered as beneficial in terms of assigning students for specific education provision. According to Piirto (1995), specification of terms based on certain constructs could lead to more accurate usage of terms and thus, labelling is used as a means to assist individuals such as parents and teachers who are directly involved in the talent development of gifted and talented children.

In general, Piirto's proposition highlights the influence of internal and external components in the development of one's talent. In her model, she does not specify the characteristics of giftedness, rather provides attributes that could be regarded as characteristics of giftedness which are influenced by the interplay of the external and genetic components. A close examination of the attributes listed in her model might reveal a strong resemblance to the characteristics of giftedness as stated in the theory of positive disintegration proposed by Dabrowski[40] (1964). Dabrowski's theory proposed five components of overexcitabilities: psychomotor, sensual, imaginational, intellectual and emotional (Dabrowski, 1964). However, her model was a result of a synthesis of evidence from a wider range of studies which had not been considered together before (for details, see Piirto, 1995).

In summary, her hierarchical notion of abilities based on IQ levels relates to the categorisation of subjects which are assumed to be related to cognitive abilities. This notion favours subjects like science and mathematics as compared with arts or sports which are assumed to require lower level of cognitive ability. However, studies have shown that there are differences between performance in mathematics and arts in relation to students' cognitive abilities (Benbow and Arjmand, 1990; Lynn, 2010). However, such findings should not be over-generalised because there are other factors such as self-discipline which have been found to influence ones' academic achievement too (Duckworth and Seligman, 2005).

2.5.1.2 Pentagonal implicit theory of giftedness (Sternberg and Zhang, 1995)

The pentagonal implicit theory of giftedness as proposed by Sternberg and Zhang (1995) presents five criteria of giftedness: excellence, rarity, demonstrability, productivity and value. Essential emphases of the five criteria of giftedness in their model are:

- Excellence refers to superiority in one or more domains which is relative and subjective based on peer comparison. In this instance, peer comparison serves as a method to judge one's performance and/or achievement.

[40] Her works are strongly influenced by Dabrowski's proposition. This can be exemplified even through her recent works (e.g. Piirto et al., 2008; Piirto, 2010).

- In terms of peer comparison, excellence performance and/or achievement must be considered as 'rare'. In their own words, '*unless excellence is rare, one is not likely to be viewed as gifted*' (p. 89)
- Extraordinary performance by gifted and talented individuals must be demonstrable through valid tests or assessments.
- Productivity is subjected on social scrutiny and evaluation in which novel products are highly regarded if a society signifies it as beneficial or valuable. This relates to value which is the fifth criterion of giftedness that they proposed.
- Value refers to what and how society views, acknowledges and supports gifted and talented individuals and their gifts or talents (development of such gifts or talents too).

In summary, Sternberg and Zhang attempted to provide a comprehensive model of giftedness. However, some of the five components that they have listed in their model are not exclusive to this particular model. Previous propositions by Tannenbaum (1986) and Csikszentmihalyi and Robinson (1986) highlight the influence of social and cultural contexts on definition of giftedness as perceived by society. For instance, Tannenbaum (1986) contends that '*society decides on the direction toward its fulfilment by rewarding some kinds of achievement while ignoring or even discouraging others'* (p. 21). In this vein, Tannenbaum's (1986) proposition is similar with Sternberg and Zhang's (1995) fifth component (value). In similar tone, Csikszentmihalyi and Robinson (1986) postulate that society and culture provide the 'background' in which talents are situated. In addition, they also contend that talents could be never considered as stable traits as '*culture demands for performance change both over the life-span and over time within each domain or performance*' (Csikszentmihalyi and Robinson, 1986, p. 264).

In addition, proposition by others such as Renzulli (1978) and Gagné (1985) also emphasised excellence aspect in their models of giftedness. For example, Renzulli (1978) used the term 'above average ability' to refer to excellence ability. However, Sternberg and Zhang do not highlight characteristics of giftedness in specific, rather they emphasise the aspects of defining giftedness in general. In comparison, Renzulli states three defining characteristics of giftedness and the interplay of the three

components which determine giftedness (please see **Section 2.5.2.1** for details). In this vein, it is assumed that Sternberg and Zhang's proposition about giftedness is more generic without explicitly specified any characteristics of giftedness.

As purported by various researchers like Csikszentmihalyi and Robinson (1986) and Clinkenbeard and Johnson (1998), giftedness is a sociocultural construct in which it is subjected on social and cultural recognition, value and evaluation. In this instance, what might be considered as rare or excellence might be viewed differently in another culture. This is similar with Sternberg and Zhang's fifth aspect of giftedness which is value. In short, Sternberg and Zhang's proposition is relevant in which it reflects findings from other research. As example, a study by Miller (2005) revealed that oratory is considered as a special ability and a characteristic of gifted individual in the Cook Islands Maori community. However, this particular characteristic might not be considered as a gift in another culture like Shona community in Zimbabwe (Ngara and Porath, 2004) which emphasise healing ability as a characteristic of giftedness. In this regards, Sternberg and Zhang's proposition of value as a criterion of giftedness provides supporting explanation about the different emphasis on the characteristics of giftedness as valued by different societies and cultures.

2.5.1.3 Gagné's proposition of giftedness as talent development

Gagné's model of talent development was first proposed in 1985. The emphases[41] of Gagné's model of giftedness could be summarised as the following:

- **Definitions of giftedness and talent:** In his first proposition, Gagné (1985) considered giftedness and talent as two separate concepts and thus, provided each with specific definition. Giftedness is defined as '*competence which is distinctly above average in one or more domains of ability*' (p. 108). In addition, he defined talent as 'performance which is distinctly above average in one or more fields of human performance' (p. 108).
- He revised the definitions of giftedness and talent later in 2004. His definitions of giftedness and talent are as followed:

[41] It is worth to note that Gagné updated and revised his model over the period of 25 years and thus, there are some changes in terms of specific emphasis in his model.

'*giftedness relates to the possession and use of untrained and spontaneously expressed natural abilities (called aptitudes or gifts) in at least among the top 10% of his or her age-peers. Talent designates the superior mastery systematically developed abilities (or skills) and knowledge in at least one field of human activity to a degree that places a child's achievement within at least the upper 10% of age-peers who are active in that field or fields'* (Gagné, 2004, p. 120).

- **A cut-off point**: Gagné (1991; 2000) proposed a cut-off point in identifying gifted and talented individuals (first in 1991 and was revised in 2000). He proposed 15% of age-peers in his 1991 version. In his 2000 version, Gagné revised the cut-off point to 10% of age-peers.
- Gagné (1998; 2000) argues that such cut-off point is important to provide concrete estimation of outstanding individuals who are to be identified as gifted and talented.
- **Components of talent development**: Regardless of the transformations of the components of talent development over the period of 25 years, some of Gagné's basic propositions about the components of talent development remain the same. The basic proposition of the components are:
- *Natural abilities:* Even though he divided the natural abilities into general and specific Gagné (1985) later on, he refined it as two domains: mental and physical Gagné (2010a).
- *Catalysts*: Gagné (1985) proposed three catalysts: environment, personality and motivation. Later, he (1991) refined it into two: intrapersonal and environmental. Further refinement of these two catalysts was on the sub-components of each catalyst. For example, Gagné (1995) proposed physical and psychological as sub-catalysts within the intrapersonal catalyst and surroundings, persons, undertakings and events within the environment catalyst. See **Appendix 3** and **6** for more details.
- *Developmental process*: In his model the developmental process is considered as an essential element for talent development. In his earlier model, Gagné (1991) proposed learning factors (which include practice or training) as an intertwining factor between two catalysts (intrapersonal and environment). Later, he proposed learning, practice and training as a developmental process

that transform gifts into talents. Gagné revised the elements of developmental process into informal/formal learning and practising (he omitted 'training' as one of the elements in this version). However, up until his 2000 version, it could be concluded that even though he omitted one of the elements (training), yet in general, his emphasis on the elements of developmental process remains the same. Later, Gagné (2010a) revised the developmental process again and in this version, he proposed three generic elements of developmental process: activities, progress and investment. The current version which he presented in the ECHA conference, developmental process comprises of maturation and informal learning/exercise (see Gagné 2010a).

- **Components of talent development (added in 2000 and 2010a)**: The additional components of talent development were added in later versions of Gagné's model. This could be considered as a part of his model transition and refinement.
- *Chance:* Chance was proposed first in his 2000 version model. Gagné (2000) proposed chance to influence natural abilities and catalysts (intrapersonal and environmental).
- *Basements for talent development:* Gagné (2010b) proposed an underlying basis for talent development or genotypic foundations which consist of physiological and anatomical phenotypes. See **Figure 2.1** for illustration.

Gagné's proposition presents a comprehensive definition of giftedness and talent which comprises varied components of talent development: natural abilities, catalysts, developmental processes and chance. In addition, his definition also includes the prevalence estimate of gifted and talented individuals which are relative to an age and peer comparison. In this regards, his proposition provides illustrative (the question of what) as well quantitative (the question of how many) criteria of giftedness and talent.

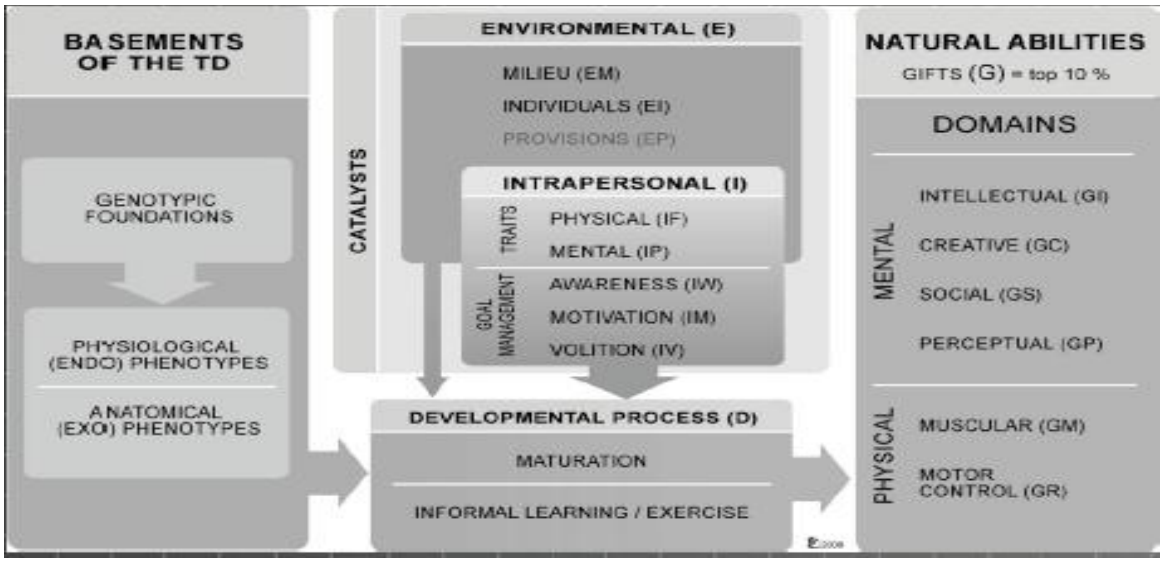
However, Feldhusen (2004) contends that the definition and term of giftedness has little use outside of the field of giftedness. This is because definition and identification of giftedness relate to social recognition and value as suggested by various researchers (e.g. Sternberg and Zhang, 1995; Csikszentmihalyi and Robinson,

1986; Clinkenbeard and Johnson, 1998). Thus, any model or theory of giftedness which encompasses a complex interrelated element of giftedness like Gagné's model might not be easily comprehensible.

Feldhusen (2004) also argues that the cut-off point in a form of percentage (15% for 1991 version and 10% for later version of Gagné's model) reflects arbitrary and fruitless quest of finding gifted and talented individuals in a society. For example, using Gagné's cut-off point in any population such as Malaysia which has nearly 2 million of citizens, it could mean that nearly 200,000 of Malaysian could be identified as gifted and talented individuals. It is hypothesised that such assumption might lead to simplification of giftedness itself.

In similar note, Guenther (2004) argues that the identification of gifted and talented individuals based on Gagné's model might be challenging in which both relies on noticeable traits that could be regarded as similar. Guenther also (2004) contends that being talented could mean being gifted as well because talent might not come into being without giftedness. In this vein, it is difficult to distinguish either the noticeable traits relate to 'gifted' characteristics or 'talented' characteristics. In brief, Gagné's model might seem to provide a comprehensive description of giftedness yet to some extent, it is problematic in terms of applying it into educational context.

Figure 2.1: Developmental Model of Natural Abilities



(Source: Gagné, 2010b)

2.5.1.4 The Munich model of giftedness

Heller and Schofield (2008) refer to giftedness as '*a multifactorised ability construct within a network of noncognitive (e.g., motivation, interests, self-concept, control expectations) and social moderators which are related to the giftedness factors (predictors) and the exceptional performance area (criterion variables)'* (p. 95). This definition is broad and comprehensive in which it hypothesises that talents are predictors of or prerequisites for performance in various domains that are influenced by internal and external moderators (known as social moderators). This model was developed as a part of the Munich longitudinal study of giftedness (Perleth and Heller, 1994). In this study, there are four aspects being considered:

- Giftedness exists in intellectual, creative, social, musical and psychomotor domains. These giftedness domains were assumed to be independent from each other.
- Academic and non-academic achievements were observed in different areas corresponding to the giftedness domains.
- Non-cognitive personality traits under investigation were achievement motivation, working styles, (test) anxiety, stress, attributional styles, and so on. These variables were considered to mediate the giftedness-achievement relationship.
- The main socialisation factors were family and school climate as well as critical life events (Perleth and Heller, 1994, pp. 78-79).

2.5.2 Framework that highlight characteristics of giftedness

Some models or theories deal directly with the characteristics of giftedness in which become the main focus of the model or theory. For instance, Renzulli's (1978) three-ring conception of giftedness proposed three components of giftedness which are task commitment, creativity and above average ability. In addition, his proposition of the three components could be further narrowed down into two aspects: cognitive (above average ability and creativity) and affective (task commitment). In this instance, his theory[42] might appear to be more appealing than multidimensional

[42] In a review by Carter and Swanson (1990) on the most cited articles in psychological literature on giftedness, it was found that Renzulli's article (i.e. Renzulli, J. S. (1978). What makes

models or theories of giftedness as proposed later on by Perleth and Heller (1994) and Piirto (1995).

2.5.2.1 Three-ring conception of giftedness (Renzulli, 1978; 1986; 2005)

Renzulli's basic premises are based on his proposition that:

> '*giftedness consists of an interaction among three basic clusters of human traits. These clusters are being above average abilities, high levels of task commitment and high levels of creativity. Gifted and talented children are those possessing or capable of developing this composite set of traits and applying them to any potentially valuable area of human performance. Children who manifest or are capable or developing an interaction among the three clusters require a wide variety of educational opportunities and services that are not ordinarily provided through regular instructional programs*' (Renzulli, 1978, p. 261)

In this instance, essential emphases of his model are:

- There are three interrelated components of giftedness: above average ability, task commitment and creativity.
- In general, according to Renzulli's (Renzulli, 1978; Renzulli, 1986) proposition, giftedness is regarded as encompassing a set of developmental traits and thus, it might be different from one individual to another. In this vein, a balance between all three components might appear as too ideal as a gifted individual might exhibit different levels of intensity of each component.
- Manifestation of those three components are essential for identification purposes and thus, identifiers such as teachers must be able to recognise the components based on what Renzulli called as creative production.
- The interaction of those three components must be supported by appropriate education provision.

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giftedness? Reexamining a definition. *The Phi Delta Kappan*, 60 (3), pp. 180-261) was one of the tops five mostly cited articles on giftedness. For details information on this review, see Carter and Swanson (1990).

Other than the identification of the components of giftedness, Renzulli (2005) expanded his definition by proposing two categories of giftedness: schoolhouse giftedness and creative-productive giftedness. In proposing the two categories of giftedness, he retained the basic components of giftedness as he proposed earlier in his three-ring conception of giftedness. However, he distinguised both categories by adding new aspects of giftedness. This could be seen from the definition of both categories of giftedness.

According to Renzulli, schoolhouse giftedness are referred to as '*test-taking or lesson-learning giftedness*' (p. 253). This type of giftedness is mostly valued in formal education settings where test scores or assessments results are widely used as indicators of learning and/or determinants of different levels of performance or achievement. For the second type of giftedness, borrowing Csikszentmihalyi's (1996) definition of creativity as '*any act, idea, or product that changes an existing domain, or that transforms an existing domain into a new one*' (p. 28), Renzulli (2005) defined individuals with creative-productive giftedness as those whose 'ideas and work will actually have an impact on others and cause change' (p. 254-255).

Looking at the definitions as proposed by Renzulli (2005), it could be concluded that some gifted individuals could thrive in a formal education setting with standardised assessments as a means of identification of giftedness. For the second type of giftedness, academic performance might not be a good indicator of giftedness as it involves socio-cultural recognition and value of the creative products that gifted individuals produce. Thus, the evaluation and assessments of such gifted individuals are more subjective and less structured.

Renzulli (1978; 2005) appears to provide a practical conception of giftedness and categorisations of gifted and talented individuals which can be used for identification purposes. Yet, some researchers are sceptical about his assumptions of giftedness. According to Kontos et al. (1983), Renzulli's stance on the measurement of giftedness relies on standardised assessments as well as subjective social recognition and evaluation which might lead to a less than perfect measure of giftedness.

In this vein, Kontos et al. (1983) contend that to some level it might be hard to rely on assessments which emphasise different philosophical paradigms underpinning them (which could be either objectivism or subjectivism) when it comes to identifying gifted and talented individuals. This assumption could be reflected in the available research findings about the effectiveness of standardised assessments and of subjective evaluations though such findings might be contradictory in some circumstances[43].

Gagné (1985) further contends that Renzulli relies on findings from selective studies as supporting evidences on creativity. One of the primary concerns on this aspect is that such studies might not be comprehensive enough to be used as supporting evidences. In similar article, Gagné also highlights that prolonged engagement on task which Renzulli referred task commitment might be due to motivation rather than commitment on completing a task per say.

Regardless of the skepticism of different researchers, there are similarities in Renzulli's proposition with various models such as the Marland report (1971) and Haensly et al. (1986). As an example, one of the similar emphases that could be seen from Renzulli's (1978) and Haensly et al.'s (1986) propositions is on the dynamic nature of the relation among the components of giftedness. According to Haensly et al. (1986) giftedness results from the interplay of '*ability, setting and internal dynamic*' traits (p. 132). In this instance, Renzulli (1978; 1986) and Haensly et al. (1986) assert that giftedness could be seen as potentials which are stable yet it could be changed or enhanced through learning and training in which the components are interrelated and in constant development.

[43] As examples, studies which used standardised assessments in identifying gifted and talented individuals (e.g. Ruschival and Way, 1971; Hawthorne et al., 1983; Kaufman and Harrison, 1986; Lubinski et al., 2001) have shown that standardised assessments are useful in identifying gifted and talented students. Also, subjective assessments like teachers' evaluation which depend upon individual assumptions of giftedness might be seemed as less objective in nature yet studies have shown that such assessments are also reliable in spotting giftedness in general (Barnard et al., 1968; Houtz et al., 1983; Abdul Majid, 1996). Findings from such studies to some extent strengthen the assumptions of reliability of such assessments by providing objective data.

In addition, Haensly et al. (1986) also proposed that other than extraordinary ability, gifted and talented individuals tend to have 'stick-to-itiveness'[44] (p. 136) trait. 'Stick-to-itiveness' could be compared to Renzulli's proposition of task commitment (for details, refer to **Appendix 5**). Other than that, Haensly et al. (1986) proposed that gifted behaviours are exhibited as a result of '*coalescence, context, conflict and commitment*' (p. 134). In this instance, it is similar to Renzulli's supposition in which he asserts that '*gifted behaviours take place in certain people (not all people), at certain times (not all the time) and under certain circumstances (not all circumstances)*' (Renzulli, 1986, p. 76). A detailed comparison of the Haensly and Renzulli' proposition is presented in **Appendix 5**.

2.5.3 Frameworks that highlight dimensions of domains

In this grouping of frameworks, the main focus on the model or theory is on the classification of the ability domain as in Gardner's theory of multiple intelligences or categorisation of cognitive processes into three components as in Sternberg's theories (the componential theory of intellectual giftedness and types of intelligence components). In addition, either models or theories are similar in terms of the differentiation criterion of giftedness i.e. intensity of performance in one or more ability domains (e.g. Gardner, 1983) or activity levels of cognitive processes (e.g. Sternberg, 1981) or types of intelligences (e.g. Sternberg, 1985a).

2.5.3.1 Gardner's (1983) theory of multiple intelligences

Gardner (1983) proposed that giftedness could be manifested in various types of intelligence. He proposed seven types of multiple intelligences: linguistic, musical, logical-mathematical, spatial, bodily-kinaesthetic and personal intelligences (intrapersonal and interpersonal intelligences). Later, Gardner (1999) added naturalistic intelligence. The basic propositions in his model of multiple intelligences are:

- To date, intelligences could be categorised into eight categories. Each category represents a domain specific of intellectual competency.

[44] 'Stick-to-itiveness' could be defined as persistency shown by gifted and talented individuals in producing an outcome or a task. For details, refer to Haensly et al. (1986).

- Context plays an important role in the recognition and development of one's intellectual competency. Context, according to Gardner (1983) could be regarded as the circumstance or state or situation within which one's intellectual competency is valued. The context, to certain extent is relative and subject to cultural, social and temporal elements (please refer to Gardner (1993) for detail description of examples of eminent gifted individuals in various domains). All of the domains of abilities as Gardner proposed exist within a context and thus, their value (in terms of how it is valued) varies differently from one context to the other.

In this instance, Gardner's (1983; 1993) proposition could be perceived as concentrating on the domain of abilities (or classification of abilities). Even though, he extrapolates that such abilities are subject to contextual recognition in which any extraordinary ability might be left unnoticed if the context which those abilities exist by gifted and talented individuals are undervalued. In this vein, his emphasis on context is similar with Sternberg and Zhang's (1995) proposition of 'value' and Csikszentmihalyi's (1996) proposition of creative domain.

However, unlike Stenberg and Zhang's pentagonal theory of giftedness, Gardner's multiple intelligences proposition focuses on a component included in any theory or model of giftedness which is intellectual ability, usually associated with intelligence. According to Allix (2000) in comparison to conventional view of a general intelligence (the '*g*' factor) which proposes a broader and more universal set of abilities, Gardner's proposition does not only provide an alternative proposition of intelligence in more structured and categorical manner, yet it also seems to be more appealing to educators because it fits with their general acceptance of individual differences.

2.5.3.2 Sternberg's (1981) componential theory of intellectual giftedness

The componential theory of intellectual giftedness as proposed by Sternberg (1981) concentrates on hierarchical intellectual traits or cognitive processes. There are three components of cognitive processes: metacomponents, performance components and acquisition, retention and transfer components (or known as

knowledge-acquisition components) (Sternberg, 1986, p. 59). All three components function not in isolation, rather all are interrelated with one another. Thus, Sternberg contends that the three components of cognitive processes are common between non-gifted and gifted individuals, yet gifted individuals are different in terms of the kinds and intensity of their cognitive processes.

In this regards, he proposed the term 'intellectual giftedness' which he defines as

> '*superior functioning of, activation of, and feedback from information-processing components of various kinds, and may be trainable at least to some extent by training that emphasizes the development of componential functioning*' (Sternberg, 1981, p. 92).

In this model, Sternberg's emphases could be summarised as follow:

- The quality and quantity of interaction among the three basic cognitive components would differentiate the performance of non-gifted and gifted individuals.
- Cognitive processes could be enhanced through training or activities which involve analogies, syllogisms and such. In this respect, Sternberg (1981) proposed that the tasks should be targeted on the enhancement of specific cognitive processes.

Sternberg's componential model does not provide any information on how to assess each of the intellectual components. Even though assessment of specific cognitive processes such as the metacomponents could measure and compare decision making processes by non-gifted and gifted and talented individuals, yet since it interrelates with other components, it is hard to determine and verify the relations with other components during the process.

2.5.3.3 Triarchic theory of intelligence (Sternberg, 1985a)

In his later book, Sternberg (1985a) described three examples of graduate students with different profiles of intelligence. Based on his observation and experience

interacting with the students (who he described as outstanding students), he proposed the triarchic theory of intelligence which meant 'to describe the relationship of intelligence to the internal world of the individual through the components, or mental process, involve in thinking' (Sternberg, 1985a, p. 59).

In this theory, Sternberg (1985a) categorised intelligence into three parts (componential, experiential and contextual). Each part serves different functions. He contends that individuals who show dominance in specific functions tend to favour or use specific mental processes that relate to on the corresponding function (Sternberg, 1988). In general, the basic premises of this theory could be summarised as follow:

- A componential part[45] deals with mental processes of an individual (as he proposed in a separate theory known as the componential theory of intellectual giftedness (Sternberg, 1981). The experiential part intermediates between internal and external functions[46] relative to novelty and automatised tasks. The ability to cope with different or similar tasks might be different from one to another which depends on context or environment[47].
- Contextual intelligence[48] functions in three ways: adaptation, selection and shaping. In short, the three functions relate to '*one's mental abilities to achieve the best possible response to the demands of the environment*' (Sternberg, 1985a, p. 67).
- Individuals could be differed in terms of the three components of intelligence and thus, might be regarded as having or showing one or more dominant components of intelligence as compared to the others (for a more detailed description, see Sternberg (1985a).

[45] Componential part or intelligence comprises of three interrelated cognitive components (metacomponents, performance components and knowledge-acquisition components).

[46] Sternberg (1985a) proposed that the external functions here could be understood as individual's experience dealing with everyday tasks. He asserts that everyday tasks might seem repetitive yet the tasks could be nonentrenched prior to be automatised after several successive encounters.

[47] Sternberg (1985a) illustrates that a task that one might find easy in a situation might be seemed as challenging in another situation depending on the environment.

[48] In this instance, transferability of skills by one individual might be different from others in which it depends on what Sternberg called as contextual intelligence.

This theory is extended from Sternberg's (1981) componential theory of intellectual giftedness (focus only specific subcomponents of componential part as proposed in the triarchic theory of intelligence). As contended by Sternberg (1985a), intelligence '*comprises of a very wide array of skills*' (p. 67), thus the three different components of intelligence are meant to show *how* these three are interrelated and *what* makes individual differ from one another in this respect. In other words, an individual could be more dominant in one type of intelligence component such as componential and not the others or might even have more than one combination of all the three intelligence components.

Sternberg (1988) later compared the different intelligence components to the functions of government: judicial, legislative and executive[49]. Individuals who are dominant in information processing components or their componential intelligence are regarded as strong in the judicial function. This legislative function is linked with contextual intelligence in which individuals who are dominant in this are considered as strong in creating, formulating and planning of ideas, strategies or tasks. In contrast, individuals who are strong in executive function are better in executing any plan or idea rather than initiating it. In this sense, executive function relates to experiential intelligence.

In summary, both of Sternberg's theories (1981; 1985a), the componential theory of intellectual giftedness and triarchic theory of intelligence, focus on different components of mental processes in general. Even though Sternberg does not directly highlight behavioural characteristics to define gifted and talented, both of Sternberg's propositions concentrate on common features, the mental processes, which all individuals have and gifted and talented are perceived as being more outstanding in their mental processes as compared with others. The main differences between his two intelligence theories are:

- Componential theory of intellectual giftedness is specific on one type of intelligence component (componential intelligence).

[49] Sternberg's (1988) proposition of the three types of individuals in reference to government functions: judicial, legislative and executive could be reflect on different types of individuals who are good in managing, planning or executing a plan. Some individuals are good in managing, but not a good planner or executioner of a plan. For more explanation, refer to Sternberg (1988).

- The Triarchic theory of intelligence encompasses three types of intelligence components in which one individual might be dominant in one type or more as compared with another (that could be studied and demonstrated from looking at various ways of dealing with daily activities).

2.6 Which models or theories best described giftedness and talent?

In previous section, I have presented some of the implicit and explicit models or theories of giftedness and talent. The emphases in each model or theory are different from others yet there are commonalities among the models or theories of giftedness and talent. In this section, I shall present a synthesis of the previously discussed models or theories of giftedness and talent. The synthesis also includes a comparison of models or theories of giftedness and talent which are not discussed in great detail in previous section.

In this instance, it could be summarised that the main difference among models as proposed by various theorists is on the emphasis highlighted in each model (see **Appendix 3** and **4** for more examples). Thus, in this vein, the application of a model might be assumed to depend upon *how* it could help one to understand this so called phenomenon known as 'giftedness'. In this regards, even though there is no specific model could provide the best conclusive explanation of giftedness, yet it is still worth exploring the differences and similarities that might exist among selected models or theories of giftedness and talent as attempted in the previous section[50].

Looking at the various models or theories of giftedness, it could be concluded that even though each model or theory might emphasise different components of giftedness, yet all models or theories of giftedness share some common features:

- giftedness relates to extraordinary performance or achievement in a domain or more than one domain;
- giftedness is not a fixed trait (it can change due to various reasons such as internal and external factors);

[50] See **Table 2.1** for a summary of some of the models or theories of giftedness and talent which are previously discussed in details in the previous section.

- giftedness is a phenomenon that can be measured or assessed;
- identification assessments and education provision are needed to promote the development of gifts or talents that one might have[51].

Thus, even though it is commonly agreed that there is no overall consensus about the definitions or conceptions of giftedness and talent at the moment, rather than having conflicting definitions or emphases, theorists and researchers in gifted studies should start to focus on these five issues as suggested by Mayer (2005):

- *Consensus definitions*
- *Straightforward objective measures*
- *Clear testable theories*
- *Conclusions based directly on evidence*
- *Valid scientific data*
- *Controlled evaluations of programs* (p. 446).

2.7 Conclusion

The discussion in this chapter began with an introduction of literature chapters (**Chapter 2, 3** and **4**). In this chapter, a general review of conceptions of giftedness was attempted first. Second, a historical review was attempted of the development of conceptions of giftedness and talent from the last century, starting with Galton's work, Terman's longitudinal study and the Marland report which can be seen to have influenced more recent developments of the conceptions of giftedness and talent, as well as research studies on gifted and talented individuals.

Then, models or theories of giftedness were presented to provide sufficient background to identify the existing varied conceptions of giftedness and talent. From the reviews of various sources in psychological literature especially, it can be summarised that the emphases as presented in varied sources are different. Some of these were exemplified in a more detailed analysis and critique of in the key models

[51] This could be seen in various instances in which a theorist not only proposed a model or theory of giftedness, but he or she also provides practical instances of how such model or theory works through identification assessments as well as education provision in which such model or theory underpinned.

and/or theories of giftedness. The varied emphases in these various models or theories of giftedness show that giftedness is not just an abstract psychological construct, it also encompasses a set of underlying constructs and ideas such as intelligence and creativity and such which are defined, assessed and valued in a range of different ways.

In this chapter, the discussions primarily concentrate on the conceptions of giftedness based on the identified models or theories of giftedness. Even though some characteristics of giftedness are highlighted in those models or theories such as excellent ability (e.g. Renzulli, 1978; Sternberg and Zhang, 1995) or intelligence (e.g. Gardner, 1983) yet there are specific characteristics of giftedness that are not mentioned in the models or theories but equally important in defining gifted and talented individuals as proposed by others in various empirical studies. Some of the characteristics are

- speed of information processing (Cohn et al., 1985; Span and Overtoon-Corsmit, 1986; Jensen, 1990; Saccuzzo et al., 1994)
- cognitive stability[52] (Coyle, 1998)
- extraordinary memory (Luria, 1968; Biederman and Cooper, 1992)
- perfectionism (Hewitt and Flett, 1991; Pyryt, 1994; Parker and Adkins, 1995; Schuler, 2000; Parker et al., 2001; Dixon et al., 2004; Speirs Neumeister, 2004b; Speirs Neumeister, 2004a; Hoekman et al., 2005; Kornblum and Ainley, 2005; Speirs Neumeister and Finch, 2006; Maksić and Iwasaki, 2009) and
- deliberate practice (Ericsson et al., 1993; Ericsson and Charness, 1994; Winner, 2000; Ward et al., 2007)

Even though the discussions about the specific characteristics of giftedness from these various empirical studies are not presented in depth, it does not mean that they are considered less important. Rather the focus of this chapter aim to analyse and critique the existing models or theories of giftedness which provide overall

[52] Cognitive stability refers to relatively little variation in cognitive responses across trials (Coyle, 1998). In this instance, gifted individuals use strategic approaches that are stable over time regardless cognitive tasks that they engage in. According to Coyle et al. (1998) it was found that gifted children used more stable effortful strategic processing as compared to non-gifted children who tend to use variable strategic processing.

guidance in this thesis. Care has been taken to identify the key concepts from various models or theories that will underpin this study[53]. Comparison between models or theories has been attempted so any limitation, uncertainty and potential shortcoming of any individual approach may be recognised.

In summary, with the variety of definitions of giftedness as proposed by various researchers in different model or theory, it could be understood that why it is suggested that there is no consensus about the definitions of giftedness. With different emphases highlighted in varied models or theories, it is evident that at theoretical level, there is no clear or dominant conception of giftedness and talent. Further discussion on the differences of conceptions of giftedness and talent as perceived by societies and cultures will be presented in the following chapter (**Chapter 3**) and will be followed with discussion on the conceptions.

[53] See **Appendix 3** and **4** for more examples and summary of models or theories of giftedness and talent which are not presented in details in this chapter.

Chapter 3: What is gifted and talented?: An exploration of social differences

3.1 Introduction

In this chapter, I continue the discussion of literature review on conceptions of giftedness and talent from various societies and countries. To begin with, I present conceptions of giftedness and talent from psychological literature and research findings in the United Kingdom. Later, I provide a review of the Malaysian conceptions of giftedness and talent and finally, I conclude this chapter with a brief comparison among selected societies and countries of their conceptions of giftedness and talent.

In general, based on the previous analysis mentioned in **Chapter 2**, it can be summarised that the terms gifted and talented are both psychologically and socially constructed term and thus the conceptions of gifted and talented comprise of an amalgamation of psychological and social aspects. Other than psychological and social constructs related to giftedness, the term giftedness also denotes developing (not stagnant or fixed) ability. This has been proposed by various researchers such as Piirto (1995), Piechowski (1986), Sternberg (1986), Csikszentmihalyi and Robinson (1986) and Gagné (2010). In addition, to be acknowledged as gifted and talented in a society means that individuals with extraordinary gifts are subject to social scrutiny and approval as proposed by Freeman (2005) and Persson (2009). In this chapter, I shall continue the discussion specifically about the conceptions of giftedness and talent from various societies to provide a glimpse of social differences of the conceptions of giftedness and talent.

3.2 Conceptions of giftedness and talent: a glimpse on UK context

As asserted by some researchers, the United States is still dominant in the research on giftedness (Painter 1978 and Jonathan 1988). Regardless of the assertion, there were various studies conducted in the United Kingdom such as on teachers' nomination of gifted students (Painter, 1978; Jonathan, 1988). Regardless of the

assertion, there were various studies conducted in the United Kingdom such as on teachers' nomination of gifted students (Painter, 1978), a longitudinal study gifted children (Freeman, 2010) and the effect of intelligence on later life (Deary et al., 2004).

As an example, one of the earliest studies on gifted students in United Kingdom was by Freida Painter[54] (1978). In her study, it was found that 15% of 137 primary school students in a particular school were nominated by their teachers as gifted and 27% of 137 were regarded as having academically outstanding performance based on class comparison. In addition, it was found that the teacher nomination was found to be depended upon scholastic attainment which is relative to intelligence (Painter, 1978). In this instance, it was found that teacher nomination could be biased if it is based on measures such as school-based assessment. It was found that teachers' nomination did not correlate with high IQ scores rather with scholastic achievement (Painter, 1978). As a summary, from her study, it could be concluded that at the time when the study was conducted, teachers relied on students' academic performance in school as a means to define and identify gifted students.

In a longitudinal study by Freeman[55] (2006; Freeman, 2010) of children labelled as gifted, it was found that children who are labelled as gifted might be vulnerable to emotional problems more significantly as compared with the non-labelled gifted children due to the pressure of being labelled as such. However, in her study, it was found that in terms of life outcomes in general, there was no significant difference between the labelled and non-labelled gifted groups.

In the book which based on her longitudinal study of gifted children which started in the 1974, Freeman (2010) asserts that labelling might have different impact on

[54] However, in her writing, Painter did not provide a clear definition of gifted students. It is not stated how she selected the students identified as gifted in her study. Based on the discussion of her findings, it is assumed that she defines gifted students as having extraordinary intellectual ability that might be manifested and confirmed through academic performance and IQ test scores.

[55] Freeman started her study on the effect of labelling on gifted students in 1974 and an extensive illustration of the findings of her study on some of the gifted students that she has followed since then could be found in her book entitled 'Gifted lives: What happens when gifted children grow up' (Freeman, 2010).

different gifted children. In most cases, she found that life chances, continuous high-quality education provision as well as personal attributes such as personality and social adaptability are among the factors for success in adulthood for gifted children who are labelled as gifted. In an earlier report by Freeman (1994) revealed that even though to some extent gifted children are pressurised by parents and teachers through their expectations, yet their life is not as challenging as commonly believed. As Freeman (1994, p. 195) puts it:

> *'gifted who grow up in homes in which there is emotional peace and security, where they are accepted for themselves and not only their brainpower, will be as able as any others to adapt to society, take advantage of whatever provision for learning is available, and be as emotionally stable as any other'*

By looking at the findings from such studies, it could be argued that adult success by gifted children might be influenced by similar factors that could be the same for non-gifted children too. This is because like other students, gifted and talented students have similar needs '*for expression and exploration*' (Freeman, 1983, p. 484). In this instance, it is perhaps understandable if the education system in the United Kingdom is geared towards inclusive education in which it emphasises on '*what learners have in common*' (Dyson, 2001, p. 26). Inclusive education is applied because it seems to have advantages on gifted students for social inclusion. In a study by Teare (1997), it was found that students who are highly able and talented are found to be well integrated in schools that are inclusive and have mixed-ability classes.

3.2.1 Giftedness: a variation of terms used in the United Kingdom

According to Stack and Sutherland (2011), there are three different sets of terms used in the United Kingdom[56]. The term 'gifted and talented' is commonly used in England and Northern Ireland whereas 'highly able' is used in Scotland and 'talented

[56] In the United Kingdom, the department of education in England, Wales, Scotland and Northern Ireland is separated. In this regards, each constituent has its own department of education (e.g. Wales – Department for Children, Education, Lifelong learning and Skills, Scotland – Scottish Executive Education Department, and Northern Ireland – Department of Education).

and more able' are used in Wales (Sutherland, 2008). Specifically, in England, the term 'gifted and talented' is used interchangeably with the term 'highly able' or 'able' as found in official reports or articles such as by Teare (1997), Freeman (1998) and Montgomery (2000).

In government documents such as educational reports from the Department of Education, UK (http://www.education.gov.uk/) and Office for Standards in Education, UK (http://www.ofsted.gov.uk), 'gifted and talented' is used as a unitary term. As an illustration, in an article by the Department of Children, Schools and Families (DCSF)[57], gifted and talented children are defined as *'children and young people with one or more abilities developed to a level significantly ahead of their year group (or with the potential to develop those abilities)'* (DCSF, 2008, p. 1). In this vein, the definition provided by the Department of Children, Schools and Families (DSCF) is in line with proposition by researchers such as Freeman (2002) who contends that gifted and talented are in the same spectrum of exceptionality.

However, even though it seems that 'gifted and talented' is regarded as a unitary concept, yet a closer look at another government report by Office for Standards in Education, Children's Services and Skills (OfSTED) reveals that gifted students are specifically defined as '*those with evident high attainment or latent high ability in one or more academic subjects (that is, subjects other than art, music and PE)*' (OfSTED, 2001, p. 11). In this instance, the definition of gifted students relates to academic achievement and attainment and thus, assessments such as national examination or school-based assessments are used to measure students' academic ability.

In addition, in the same document, talented students are referred to as '*those with evident high attainment or latent high ability in a creative or an expression art or in a sport*' (OfSTED, 2001, p. 11). The different emphasis on the characteristics of gifted

[57] The jurisdiction of the Department of Children, Schools and Families (DSCF) affects people in England and thus, the definitions of gifted and talented students as presented here are affecting the education system in England only. In addition, the definitions of gifted and talented students as stated in the government report by DSCF is slightly different from the definitions stated in another government report by OfSTED even though the jurisdiction of both departments is meant for people in England. In this vein, it could be hypothesised that there is discrepancy of definitions of gifted and talented students within England.

students as well as talented students by OfSTED serves as a guideline in identifying students at school level. In this instance, even though gifted and talented are treated as a unitary term in general yet the specification of extraordinary ability refers to domain specific of ability of gifted and talented individuals. Arguably, the specification of abilities according to specified subjects[58] could pose some challenges when it comes to identify the students as gifted and talented as well as to develop and assign programs for the identified gifted and talented students.

Thus, with the use of other terms such as 'highly able' or 'gifted and talented individuals', it might be concluded that such practice might lead to greater confusion in the perception and understanding of giftedness. As asserted by Cigman (2006), giftedness is difficult to conceptualise because '*the decision who is and is not gifted bring us to the threshold of our disagreement about values'* (p. 197). Unless those values are clearly identified and defined, the argument of who is gifted and talented and who is not could be debated for years to come. However, Cigman (2006) contends that regardless of the terms used, as long as the discussion of the terms are clear and well understood, the debate on which terms to use should not be an issue.

In an attempt to explain the interchangeable use of terms 'gifted and talented' with 'highly able', Freeman (1998) contends that the term 'highly able' refers to the demonstration of exceptional performance in one ability domain or more than ability domains or extraordinary potentials that have not been identified through assessments or experts. In this instance, it is unsure if the term 'gifted and talented' can be used to refer to adults whereas the term 'highly able' should be used to refer to children.

However, in this instance, the word 'potential' could have different meaning if it is looked at from different perspectives. In her previous proposition, Freeman (1983) proposed that giftedness is relative to social and cultural subjective judgment. Therefore, identification of potential is influenced by how it is defined and how the individuals are selected to be identified as those who have exceptional potentials in

[58] In this vein, giftedness is perceived in relation to prowess in academic subjects whereas talent is perceived in relation to prowess in non-academic subjects such as arts or sports.

which all these relate to particular social and cultural values. In short, it is not easy to ascribe to one particular definition or assessment to identify gifted and talented students.

This still leaves an unclear case as to how the lack of consensus in definitions of giftedness influences the identifying procedures in the United Kingdom. One of the possible effects might be in terms of the variability of identification procedures implemented in the United Kingdom schools. This scenario could be attributed to the '*lack of conceptual clarity as to what giftedness entailed*' (Hartas et al., 2008, p. 6).

To explore the perception and understanding of giftedness among tutors who involved in the selection of gifted and talented youth for the National Academy of Gifted and Talented (NAGTY) programs, Hartas et al. (2008) found that tutors diverse views about giftedness (Hartas et al., 2008). In addition, they found that the diverse views inadvertently influenced the selection process. They explained the variability of identification of gifted and talented students by the tutors in four aspects: defensibility, equity, advocacy and pluralism. A summary of each aspect is presented as follows:

- Defensibility refers to justification of procedures involved in the identification of gifted and talented students. According to Hartas et al. (2008) evaluators or identifiers need to have '*an understanding of the relative value of different assessment procedures and a consensus on what counts as evidence of giftedness*' (p. 13). However, in this vein, it could be assumed that to have similar understanding of various assessments involved might be almost impossible for all evaluators or identifiers. This is not only relating to understanding of the assessments and procedures involved in using such assessments, but also evaluators or identifiers' view on the importance of such assessments.
- Equity relates to the question of what and how to provide education provision that meeting the needs of gifted and talented students. According to Hartas et al. (2008), selectors have to make the best decisions in identifying as well as assigning the students to appropriate programs. In this vein, it is not easy to

justify the decisions by selectors as each might hold different perceptions about the assessments and relevance of special provision for gifted and talented students and thus, the factor of equity can only be seen as idealised one.

- Advocacy relates to '*the process of taking into consideration and safeguarding the interests of all young people who applied*' (Hartas et al., 2008, p. 14). In this instance, Hartas et al. (2008) contend that evaluators or identifiers must consider the characteristics and needs of gifted and talented students that match with existing education provision suitable for their characteristics and needs. This task requires evaluators '*to reflect on issues of giftedness and reach a consensus with regard to the type of evidence that should be included in the applications*' (Hartas et al., 2008, p. 14).
- Pluralism refers to inclusivity and accessibility of assessment and education provision for gifted and talented students. In this instance, among the issues that under debate are '*on decisions to assess ability and academic performance, and grant access to gifted programs*' (Hartas et al., 2008, p. 15).

Findings by Hartas et al. (2008) are similar with previous findings by Campbell et al. (2007). According to Campbell et al. (2007), the issue of identification procedures are not only based on the diverse terminology used per se, but also on social equity. Thus, they proposed that identification approach for gifted and talented students - i.e. which would be recruited into the National Academy for Gifted and Talented Youth (NAGTY)[59]- is '*multi-modal*'[60] (Campbell et al., 2007, p. 116). Yet, it could be argued that the identification approach might favour students with high socioeconomic status (SES). In this instance, they acknowledge that this might not be in line with the social inclusion agenda as intended in the educational policy.

This could be attributed to four challenges as they describe in their article. According to Campbell et al. (2007) the implementation of educational policy at school level is difficult when there is lack of strategic policy at national level. This might be

[59] Government funds for the National Academy for Gifted and Talented Youth (NAGTY) was stopped in early 2010. In one of the local newspapers (The Guardian), it was reported that the government action is perceived with mixed feelings. For more details, see Murray (2010).

[60] Multi-modal identification approach relies on '*a single test (of intelligence or ability) being eschewed in favour of nominations by teachers and others drawing upon a range of evidence, including attainment tests, portfolios and other evidences*' (Campbell et al., 2007, p. 116).

influenced with the need to avoid promoting the ideology of elitism by providing special provision for gifted and talented students. Also, with parental pressure to get the best education for their children, those with better social status are usually in more a favourable position. Predictably, this might increase the disproportionate nature of education provision for students identified as gifted and talented as well as for students who are not identified as such. In this instance, it becomes problematic to provide equal education for students based on their needs.

3.3 Conceptions of giftedness and talent: A glimpse on Malaysian context

As mentioned in **Chapter 1**, there are few studies done in Malaysia with regards to giftedness. Therefore, despite vast and rich information about giftedness from psychological literature, yet there is a dearth with regards to conceptions of giftedness and talent in Malaysia. According to Phillipson et al. (2003) studies about giftedness in Malaysia are still scarce. This is because the development of gifted education is still in its early stage. They proposed that there is need for the '*conceptualisation of giftedness within Malaysia's geographical and ethnic neighbours*' (Phillipson et al., 2003, p. 159).

Realising the need to develop gifted education in Malaysia as well as fulfil the gaps on studies on giftedness, the Malaysian government has taken the initiative to explore the needs of gifted education in Malaysia in 2005 (EPRD, 2006). In the executive summary of the study[61] which was published by Ministry of Education Malaysia in 2006, gifted is defined as having academic excellence and cognitive abilities (EPRD, 2006). In short, to be identified as gifted in Malaysia, one has to be an academically high achiever. However, in this study it was found that there is no indication of heavy reliance on intelligence tests in identifying gifted students in Malaysia as perceived by the participants[62] (EPRD, 2006).

[61] The executive summary is an official report of a study conducted in 2005 by the Ministry of Education to explore the needs of gifted education in Malaysia.

[62] The participants of this study were secondary students from selected boarding schools, tertiary students, secondary school teachers, academicians in tertiary education institutions as well as officers in state education department.

However, intelligence tests are commonly used such as for the membership of Mensa Malaysia[63]. From Mensa Malaysia website (see http://www.malaysian-mensa.org/) states the requirement for its membership with an IQ score of 148. However, there is no information on the types of intelligence used by Mensa other than the administration fees for the test and duration of taking the test. In another countries such as the United States, intelligence tests such as Stanford-Binet and various types of Wechsler scale are predominantly to measure intelligence level (Flynn, 1984). Other than Stanford-Binet and Wechsler scales, there are various types of intelligence tests such as Raven's Progressive Matrices Test or Otis Intermediate Test of Mental Ability, however Mensa Malaysia does not specify which assessment it uses in its website (http://www.malaysian-mensa.org).

In identifying gifted and talented students, other than psychological assessments such as IQ tests, researchers show in various studies that there are other different assessments which can be taken by students (e.g. Chae et al., 2003; Dunn et al., 2004) or through others rating such as by teachers (e.g. Pfeiffer and Jarosewich, 2007) or parents (e.g. Kay, 2001) in identifying gifted and talented students . **Table 3.1** lists examples of assessments that students could take and also others such as teachers or parents from various studies on the assessments use to identify gifted and talented students.

[63] Information about Mensa Malaysia was accessed 1 September 2010 from Mensa Malaysian official website at http://www.malaysian-mensa.org

Table 3.1: Examples of assessments used by students and others

Assessment (taken by student)	Researcher(s)
• Strong-Campbell Interest Inventory	• (Lubinski et al., 1995)
• EXPLORE Test	• (Lupkowski-Shoplik and Swiatek, 1995)
• Inventory of Childhood Memories and Imagining and Selected Talent Domain (ICMIC)	• (Dunn et al., 2004)
• DISCOVER	• (Sarouphim, 1999)
• Test of Variables of Attention (TOVA)	• (Chae et al., 2003)
• Problem Solving Assessment (PSA)	• (Reid et al., 1999)
• Matrix Analogies Test-Short Form (MAT-SF)	• (Reid et al., 1999)
• Torrance Test of Creativity	• (Clark and Zimmerman, 2001)
Assessment (use by parents)	**Researcher**
• Talent profiles	• (Kay, 2001)
Assessment (use by teachers)	**Researcher(s)**
• Gifted Rating Scales-School Form (GRS-S)	• (Pfeiffer and Jarosewich, 2007)
• Teacher rating scales	• (Jarosewich et al., 2002)
	• (Petscher and Li, 2008)

Regardless of such varied assessments, when it comes to the Malaysian context and practice, it is commonly assumed that intelligence tests such as Wechsler Intelligence Scale for Children IV (WISC-IV) or Ravens Matrices are the best assessments to identify giftedness. In Malaysia, intelligence tests such as Wechsler scales which have been adapted to suit with Malaysian context are commonly used as identification mechanism of gifted students. For instance, a study by Abdul Majid and Othman (1995) attempted to investigate the appropriateness of the Malay version of the WISC-R. In their study, the WISC-R was translated back-to-back and changes of certain terms were chosen to suit with the Malaysian cultural context (Abdul Majid and Othman, 1995). From their study, it was found that the reliability for the Malay version is high at .91. In this instance, their study provides evidence on the appropriateness of adapted version of an intelligence test to be applied in Malaysian context.

Other than the study by Abdul Majid and Othman (1995), at the time of writing this thesis, I found that there are few studies on the assessments used in Malaysia for identifying gifted and talented students, other than intelligence tests[64]. In a PhD

[64] For further reference on studies on the use of intelligence tests in Malaysia, refer to studies by Abdul Majid and Othman (1995), Noriah et al. (2000), Siti Fatimah et al. (2009) and Al-Shabatat et al. (2009)

thesis by Abdul Majid (1993), five assessments were investigated in exploring the accuracy of identifying gifted and talented in Malaysia. The assessments that he studied in his research were an achievement assessment i.e. UPSR [65], a teacher's rating scale i.e. Scale for Rating Behaviour of Superior Students (SRBCSS), an individual self-rating scale i.e. School Failure Tolerance (SFT), a scale for parents i.e. Parents' Rating Scale and well-known intelligence tests i.e. Wechsler Intelligence Scale for Children – Revised (WISC-R) and Ravens Matrices. In his study, he used UPSR results as well as WISC-R to distinguish 303[66] gifted and non-gifted students in 16 schools in Malaysia. After that, he distributed SRBCSS to teachers and Parents' Rating Scale to a parent of each student. This was meant to compare the students' IQ scores with others ratings in identifying giftedness. In his study, it was found that '*all teachers rated the intellectually gifted higher than non-intellectually gifted respondents*' (Abdul Majid, 1993, p. 157).

However, it was found in his study that teachers could not differentiate between the gifted students from the non-gifted students in creativity sub-scales of SRBCSS (Abdul Majid, 1993). According to Abdul Majid (1993) from a cross tabulation analysis between UPSR and SRBCSS, it was found that there was discrepancy between teacher's rating and student's performance in UPSR. Teachers seemed to give a high rating for the non-gifted students and give low rating for the academically gifted students based on UPSR scores[67] (Abdul Majid, 1993).

From this instance, it shows that achievement scores might not be a good predictor of giftedness. This could be due to several reasons. First, UPSR is a national examination for primary school students and thus, it is limited to a specified syllabus[68]. Second, the practice of teaching to the test might lead to high scores in

[65] UPSR is an abbreviation for *Ujian Penilaian Sekolah Rendah* (Primary School Evaluation Test) which is a national examination for primary school students (Standard Six level). It is commonly used as a screening assessment prior to secondary school especially for the admission to residential secondary schools (see **Chapter 1** for details).

[66] From his study, 101 out of 303 students were identified as gifted based on IQ scores of 120 and above from WISC-R (Abdul Majid, 1993).

[67] It was found that academically gifted student did not necessarily achieve good grades in the UPSR which is based on alphabetical grading (A, B, C, D or E). The highest grade is 5As.

[68] Based on my own experience, a few weeks before any national examination either in primary or secondary schools, teachers would 'impose' revision weeks in which students would be exposed to test taking skills. In this instance, indirectly students like me are exposed to the practice of

UPSR. Based on these two possible reasons, according to Abdul Majid (1993), UPSR would not be efficient to identify gifted and talented students.

In a study by Abdul Majid (1996), an adapted scale by Renzulli (1971) known as Scale for Rating Behaviour of Superior Students (SRBCSS) was used to explore the accuracy of teacher' ratings in identifying gifted and talented students. It was found that teacher ratings contain 'false negatives' which indicates teachers' failure to identify students correctly using an adapted scale known as Scale for Rating Behaviour of Superior Students (SRBCSS). In this instance, Abdul Majid suggests that teachers (including pre service teachers) need to be equipped with the knowledge to use such a scale in order to identify students as gifted and talented accurately.

In developing a gifted programme called PERMATApintar[69], Universiti Kebangsaan Malaysia (UKM) -one of the local universities in Malaysia- developed specifically an assessment called UKM1 and UKM2 to identify gifted and talented students in Malaysia. UKM1 and UKM2 are used as screening assessments for PERMATApintar programme. According to Siti Fatimah et al. (2009) in identifying gifted and talented students[70] in Malaysia, Raven's Standard Progressive Matrices was adapted with permission to be used in developing UKM1. In addition, UKM2 was adapted from WISC-IV. In both instances, the adapted versions were tested again to measure their validity and reliability. Siti Fatimah et al. (2009) claim that the adapted versions have high values for validity and reliability after testing it with 250 academically high achievers in several schools in Selangor and Negeri Sembilan. The assessments to identify gifted and talented students for PERMATApintar programme involve two stages: 1) students have to take UKM1 first and 2) those that are successful to get

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teaching to the test. Thus, it is unknown the real factor for getting good grades in such national examination. It could be due to extensive rote learning or individual cognitive ability.

[69] PERMATAPintar is a recently developed programme for gifted and talented students in Malaysia. It is like a summer programme but since Malaysia does not have four seasons, it is conducted at the end of an academic year for schools i.e. December.

[70] According to Siti Fatimah et al. (2009), the targeted participants for the PERMATApintar programme are 9 to 15 years old students. Since PERMATApintar was launched in March 2009, the assessments i.e. UKM1 and UKM2 were conducted from March until June 2009 and there were 339,147 students had participated in UKM1 (Siti Fatimah et al., 2009). For further details, see Siti Fatimah et al. (2009) in their edited book, *PERMATApintar Negara: Pengalaman UKM* (National PERMATApintar: A UKM experience).

high scores in UKM1[71] would be able to take UKM2. In this instance, UKM1 is a preliminary screening test for students who are gifted and talented.

However, according to Siti Fatimah et al. (2009), it was found that there are discrepancies from some of the participants' responses. It appears that some of the students might have been given assistance from others such as adults or peers while answering the tests. According to them, this could be seen from a number of similar responses by some students. They also added that, in other cases, it was found that some of the responses were similar with other students' responses and suggest that copying might has taken place. In administering psychological tests such as UKM1 and UKM2, it is commonly agreed that test administration should never be compromised. However, since it was the first time of UKM1 and UKM2 to be used in this regard, it is expected that there would be some limitations and flaws (Siti Fatimah et al., 2009). According to them, the limitations and flaws found in this first phase of PERMATApintar would be addressed in the future.

Other than UKM1 and UKM2[72] as assessments to identify gifted and talented students in Malaysia-, other type of intelligence test such as Cattell Culture Fair Intelligence Test (CCFT) was used to measure the relations of environment with students' ability in a study by Al-Shabatat et al. (2009). It was found in their study which involved 180 undergraduates from School of Mathematics and Computer Science in one of the local universities in a northern state of Malaysia- that there is a strong relation between environment, fluid intelligence and analytical abilities. In their study, they used Cattell Culture Fair Intelligence Test (CCFT) to select the students and from 210 students who took the test, 180 were selected based on the 35 cut-off point of CCFT. The students were also tested on two measurements: a) an abilities measurement and b) an environment questionnaire that were developed specifically for the study. According to Al-Shabatat et al. (2009) environmental factors such as family, peers and teachers influenced the development of giftedness

[71] The cut-off point for the scores is 80 for UKM1 (full score is stated as 140). Therefore, only students who have scores 80 or onwards are selected to take the following assessment i.e. UKM2.

[72] UKM1 and UKM2 could be considered as screening assessments to select students who will participate in the PERMATApintar program. Since both are computer-assisted assessments, it could be assumed that the participants selected in this particular program might be skewed in certain way.

and this instance can be measured and determined through the intelligence level that one might have.

Despite such studies, however, there has been no attempt yet to explore how Malaysians in general perceive the use of psychometric assessments such as intelligence tests in identifying gifted students. In this instance, there are gaps in terms of the perception and understanding of identification process and/or procedures of gifted and talented students in Malaysia by people such as teachers. As an example, in a study[73] conducted by the Ministry of Education in 2005 (EPRD, 2006), the exploration is limited on the definitions of giftedness and perceptions on the needs for special education for gifted students which did not include any aspects on the assessments of gifted and talented. Therefore, in my study, I attempted to investigate teachers' understanding of identification process and/or procedures (including identification assessments) involved in identifying gifted and talented students.

Other than the study by the Ministry of Education, an article by Phillipson (2007) presents a Malay conception of giftedness based on classical literature that illustrates terms and behavioural aspects related to giftedness. According to Phillipson (2007) Malay terms such as '*cerdik*', '*pintar*', '*pandai*' and '*bijaksana*' could be found from ancient writings such as in *Sejarah Melayu*[74] (Malay Annals) and also folklore. A folklore such as *Hikayat Sang Kancil*[75] illustrates the cleverness of a mouse deer in dealing with various situations that also serves as moral examples for people in dealing with life issues such as survival, morality and justice (Ahmad, 1990). In an

[73] The study by the Ministry of Education (2005) did not include pre service and in service primary school teachers in the sample and thus, it is still unclear how they define and understand giftedness.

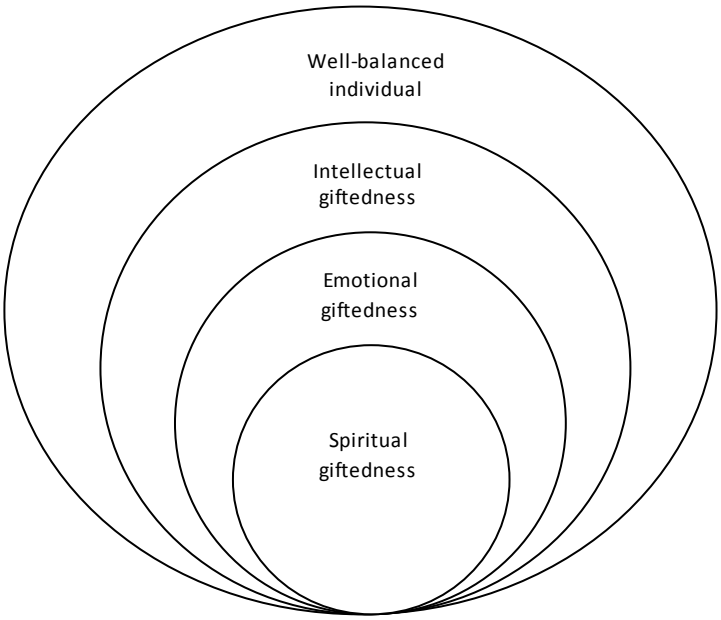
[74] Excerpts from *Sejarah Melayu* (Malay Annals) are taught formally in secondary school when I was schooling. Currently, it is no longer be emphasised in the Malay language syllabus and being replaced with others such as Malay proverbs, poems and short stories from contemporary well known authors.

[75] In Malay culture, animals are used to depict human behaviours in positive and negative way. For instance, in Malay culture *kancil* (a mouse deer) is regarded as a clever animal. Therefore, to depict cleverness, a Malay proverb, *Cerdik macam kancil* (translated as 'Clever like a mouse deer') is used to refer an individual who is quick in thinking or in solving problem. In contrast, a cow is depicted negatively when it comes to intelligence. This can be seen in another proverb, *Bodoh macam lembu* (Stupid like a cow). For further details, refer to *Hikayat Sang Kancil* which contains folklore that shared by South-East Asian region in which it can be found in Indonesia too (McKean, 1971) that contain various examples as evidences on the intelligence of *kancil* (mouse-deer).

article by McKean (1971), translated Malay folklores are used to analyse tales that feature *kancil* (mouse-deer) escaping from dangers or solving problems as an evidence of its sagacity and intellectual ability. In addition, in a book by Skeat (1900) illustrates the use of various proverbial sayings that depict the cleverness of *kancil* (mouse-deer) as compared to other animals. However, there is no study that has proven how these folklores influence the notions of giftedness and talent among Malay as claimed by Phillipson (2007). In this instance, it is should be noted that since folklores are assimilated in daily life directly or indirectly, it might be possible the perception of Malay people on giftedness is influenced by such folklore as proposed by Phillipson (2007).

Some research (e.g. EPRD, 2006; Phillipson, 2007) have previously attempted to explore the definitions of giftedness at some level and context in Malaysia, yet what is being presented in an article about PERMATApintar by Rosadah et al. (2009b) does not reflect the definitions investigated in the research. In their article, they state that the conception of giftedness adopted for the PERMATApintar programme comprises definitions such as from Wechsler (1944), Gardner (1983), Gagné (1995), Piirto (1995), and Sternberg (2003). It is worth noting that those definitions are developed and researched in the west. Perhaps based on the justification that such definitions are well researched, the amalgamation of various definitions from various researchers was used to develop a model by UKM for its PERMATApintar programme (See **Figure 3.1**). However, there is no study conducted in Malaysia to explore how definitions from a model by Gagné (1995) fit with the existing conceptions of giftedness as held by Malaysians in general, for instance. Due to this, there are needs to explore the definitions, as proposed in various models or theories which primarily developed in the west, as perceived by Malaysians.

Figure 3.1: PERMATApintar Holistic Gifted Development Model[76] (Rosadah et al., 2009a, p. 28)



3.4 Conceptions of giftedness and talent: a review from studies in various societies and countries

Each society and culture has its own history that shapes the social aspects of its people. The social aspects could be in terms of significant periods such as the Renaissance and the Enlightenment, or it could be in terms of social and cultural influences such as rulers, politics, religious values, customs and traditions. These social aspects to certain extent influence how giftedness is perceived and conceptualised.

[76] The PERMATApintar Holistic Gifted Development Model (2009) comprises of four elements: well-balanced individual, intellectual, emotional and spiritual giftedness. However, each element is not defined or explained in details in the edited book (see Rosadah et al. (2009a) for reference) nor in an article (see Abu Yazid and Noriah (2010) for details) in which this figure was illustrated. In this instance, it is unclear how each element is defined and assessed.

3.4.1 Conceptions of giftedness and talent: examples of European context

For instance, the period of Renaissance is known widely due to the evolution and advancement in scientific knowledge and arts that influenced many societies in Europe such as in Germany and Italy. According to Ziegler and Stoeger (2007), there are two periods, the Renaissance and Age of Enlightenment, that influence the Germanic view of gifted and talented. According to them, during the Renaissance, giftedness is regarded as a result of individual endeavour based on gifts from God. In this instance, the remnants of religious tradition from Protestantism were still prevalent. However, during the Age of Enlightenment, 'individual constructivism' (Ziegler and Stoeger, 2007, p. 72) started to permeate and change the Germanic society and culture in which giftedness is perceived as individual effort and cultivation. In recent years, in their review on various studies conducted in Germany, it might be concluded that gifted is mostly equated with high intellectual ability or extraordinary performance in reasoning, learning and understanding: academically excellence.

In addition, according to Brann (2002), the Renaissance initiated some social scrutiny on the characteristics of gifted individuals in Italy. He asserts that certain behaviours such as melancholy, agitation and lack of social skills were associated not only with madness but also genius. Differentiation between gifted individuals and people with psychological disorders is very vague if relies on certain common behaviours. Thus, social recognition of gifts might determine on how gifted individuals are identified. Brann (2002) also contends that superior cognitive ability was linked with creative endeavours that demand isolation from others. In addition, he claims that peculiar behaviour is regarded as an indicator of giftedness and thus, it is expected that gifted individuals would act differently from others. In summary, Brann's proposition reflects the perception of people during the Renaissance of gifted and talented individuals.

In a study by Roncorini et al. (2010) with 111 Italian teachers, it was found that teachers perceive that gifted and talented children experience difficulties while interacting with peers to certain level. In this instance, teachers perceive that gifted

children are lack of social skills that affect the social relation that they might have with others. In this respect, it seems that to some extent, the belief that gifted individuals might lack in social skills are still prevalent at present as previously proposed by Brann (2002) in describing the social belief during the Renaissance.

In addition, the perception of peculiar behaviour and lack of social skills as perceived in the Germany and Italy might be perceived similarly in other country such as Sweden. From a study by Persson (1998) it was found that Swedish teachers regard gifted and talented children in terms of five main conceptual attributes: cognitive attributes, personality characteristics, precociousness, social attributes and classroom function. It is perceived that gifted and talented students have extraordinary cognitive abilities such as unique information processing and creative thinking as well as high levels of knowledge of how to do things. For personality characteristics, teachers perceive that gifted and talented students as more independent, adaptable and have achievement orientation and motivation (Persson, 1998). This skewed perception of personality attributes are based on teachers' personal observation and experience of teaching students who they seen as gifted and talented.

In this study, it was found that in terms of precociousness, teachers regard that gifted and talented students exhibit their extraordinary abilities from younger age (Persson, 1998). In this instance, age factor is taken into consideration as an indicator of giftedness. According to Persson (1998) for the social attributes, teachers perceive that gifted and talented students are different from others in terms of their maturity, ability to understand instruction, make decision, and cooperativeness. Also, it is expected that gifted and talented students well contribute more in the classroom. In this instance, according to Persson (1998), Swedish teachers consider '*paragons of virtue*' (p. 193) as an attribute of giftedness. This relates to the last attribute which is classroom function. In this regards, even though teachers have difficulties to differentiate between high ability and potential of using that ability in a classroom, yet it is perceived that gifts and talents as *'the ability to function as a role model, as a child who is socially responsible and helps the less able'* (Persson, 1998, p. 188). In this instance, social contribution is highly

emphasised in defining, identifying and confirming students as gifted and talented. This finding is similar in studies conducted in other cultures such as the Maori by Bevan-Brown (2005) and Miller (2005).

3.4.2 Conceptions of giftedness and talent: examples of Polynesian context

For the Maori (the native people of New Zealand), giftedness is perceived as *'exceptionality in cultural skills, abilities, and knowledge but it also includes exceptionality in culturally valued qualities'* (Bevan-Brown, 2005, p. 151). In this instance, giftedness is equated with demonstration of exceptional abilities that are culturally recognised and valued. She also contends that for Maori, giftedness is not just individual attributes, but also collective attributes ascribed to group effort. Individual giftedness would not be actualised if it is not recognised and developed in which it requires the involvement and effort by others in recognising and developing the gifts a gifted individual might have. According to Bevan-Brown (2005), the 'ownership' of giftedness is not ascribed to the gifted individual only, but also to the people and society in which responsible in cultivating the gifts of an individual. In addition, to be recognised and identified as a gifted individual, one must also be able to contribute with the gifts that one has to the society

In another study by Miller (2005), it was found that cultural identity is considered as a part of giftedness. In this case, cultural identity relates to social contribution or service to other people. In other words, the way one is identified is based on social recognition and in this case, it relates to what one has to offer to the society with gifts or talents. In this vein, this finding is similar to the study conducted by Bevan-Brown (2005). However, in Miller's study, a comparison between two groups of Maori (the New Zealand Maori and Cook Islands Maori) was attempted. It was found that there are differences between New Zealand Maori and Cook Islands Maori in terms of how they perceived giftedness. The differences relate to individual characteristics of gifted.

According to Miller (2005), Cook Islands Maori emphasise on the Christian belief in defining giftedness in which 'good knowledge of the Bible' serves as an indication of

giftedness. In contrast, New Zealand Maori perceive extraordinary abilities and moral values as indicators of giftedness (Miller, 2005). In summary, in both studies it could be concluded that the findings present a Maori perspective on giftedness. This is because on a larger scale, it seems that Maori people has similar conceptions of giftedness but when it is compared with different groups of Maori, there are differences in terms of the conceptions of giftedness and talent as held by the groups.

3.4.3 Conceptions of giftedness and talent: examples of African context

Difference conceptions of giftedness and talent as held by indigenous cultural groups are also found in another culture such as Shona and Ndebele in Zimbabwe (Ngara, 2006). According to Ngara (2006), Shona and Ndebele have similar language root for the terms giftedness in which refer to the '*spiritual element and/or biological basis*' (p. 52). In this instance, giftedness is regarded as special attributes endowed by God from birth. Other similarities found in both cultures are in terms of giftedness are the perceived characteristics of gifted and talented. According to Ngara (2006), to be identified and recognised as gifted and talented, an individual must be able to demonstrate extraordinary ability which is comparable to other non-gifted and talented individuals. Also, it is regarded that the domains of extraordinary ability are not restricted to one particular domain. However, in this study, it was found that Ndebele culture highly regards certain attributes reflecting historical warrior such as being a good strategist, bravery, courage and cunningness (Ngara, 2006). In contrast, Shona culture emphasises on '*peaceful life orientation*' (Ngara, 2006, p.53) and thus, attributes such as humbleness and visionary are highly regarded.

3.4.4 Conceptions of giftedness and talent: examples of Asian context

From the findings in Ngara's study on two cultures, it could be concluded that to certain extent, culture does influence the way giftedness is defined, identified and cultivated. Similar findings were found in Asian culture (e.g. Chan, 2007b; Matsumura, 2007; Maksić and Iwasaki, 2009; Anuruthwong, 2007). In a review by Chan (2007b) on the influence of Chinese culture on giftedness, he contends that the

conceptions of giftedness among Chinese are still based on ancient root in which it is regarded that gifts and talents are innate and considered as a blessing from '*tien'* (heaven)' (Chan, 2007b, p. 38). However, even though it is believed that gifts and talents are innate and as blessing, yet it is emphasised that individuals must develop their own gifts and talents through learning and training. In this instance, according to Chan (2007b) individual efforts are crucial in developing gifts and talents.

Similarly, in several studies it was found that in Japan, individual efforts are highly regarded (Holloway, 1988; Sato et al., 2004; Matsumura, 2007; Maksić and Iwasaki, 2009). Sato et al. (2004) refer the emphasis on individual efforts as 'belief-in-effort' (p. 318). In this instance, 'belief-in-effort' implies that individual efforts are the main factor in developing ability or succeeding in academic field or any other domain (even when one may lack of ability). This belief is deeply rooted in Japanese culture and could be seen in its education system.

As an example, according to Matsumura (2007) the Japanese people perceive that everyone should be treated equally in education system and success or failure is regarded based on individual efforts and drive to succeed. Like other cultures like Ndebele (Ngara, 2006) , Maori (Bevan-Brown, 2005; Miller, 2005) and Chinese (Shi, 2004; Chan, 2007a), Japanese culture acknowledges the influence of heritability on giftedness (Sato et al., 2004; Matsumura, 2007). In this instance, it could be concluded that even though gifts or talents are considered as inherited yet individual efforts would determine one's giftedness and this is been highly emphasised in Japanese culture.

In a study by Maksić and Iwasaki (2009), it was found that for the Japanese, it is expected that students do the best efforts in their domain of expertise '*first for their community and family, and then for themselves*' (p. 58). In this vein, social contribution and accountability are expected from each individual and the students in their study do aware of such expectations. In short, the expectations inevitably lead to high level of perfectionism among Japanese students as compared to American students (Maksić and Iwasaki, 2009).

In addition, according to Maksić and Iwasaki (2009), the difference of perfectionism orientation is also due to the inculcation of social values in Japan which is different from what is being emphasised in the US. Maksić and Iwasaki (2009) gave example of the different orientation such as performance orientation in which internal competitiveness[77] is highly valued in Japanese culture as compared to external competitiveness (which is highly valued in American culture). In short, in Japanese culture, giftedness relates not only to innate gifts or talents, but also individual efforts, self-critical and accountability to the society. According to Bugaj (2009), teachers in Japan believe that students are born with equal abilities to achieve and thus, to have special programs for gifted students could be seen as discriminatory. Thus, due to this general belief, until this day, there are no specific programs for gifted students in Japan (Bugaj, 2009).

In contrast, in Thai society, gifted and talented individuals are perceived differently in different time period (Anuruthwong, 2007). In a review by Anuruthwong (2007), the sociocultural era in Thailand could be divided into four periods. Based on ancient records and evidences, the emphasis on the characteristics of giftedness is different in each period (Anuruthwong, 2007). Anuruthwong (2007) states that from the second period until recent years (fourth period), the reign of kingdoms influences what characteristics regarded as gifts and how giftedness is defined, identified and developed especially through formal education. During the first and second period, there was no formal education other than for certain groups of people such as princes and thus learning for most people was limited to hands on living skills such as carpentry and hunting. In addition, during these periods especially during the second period, social mobility was difficult to break with the endorsement of royal decree and thus, mastery of living skills such as carpentry was considered as one of the valuable assets to prove one's worth. In this instance, giftedness was associated with mastery of a living skill such as weaving or hunting.

[77] According to Maksić and Iwasaki (2009) internal competitiveness refers to the sense to compete with one self, such as by comparing with previous performance. In this vein, it demands an individual to be self-reflective and critical on his or her own performance. On the other hand, external competitiveness refers to an attribute to compete with others. In this instance, an individual compares his or her performance with others.

However, according to Anuruthwong (2007), the way how giftedness is perceived changes according to the demands for economic growth and globalisation needs especially during the third and fourth period. In the third and fourth period, emphasis on formal training with western influences permeated its traditional perception of giftedness which previously associated with living skills such as carpentry, hunting and weaving. Even though such skills could lead to source of income, yet it was mainly for local consumption as could be seen in the first and second period emphases. In addition, Anuruthwong (2007) further claimed that that during the third and fourth period, skills which related to academic performance are more valued than living skills, and this is in line with formal education which emphasises on academic skills more than living skills. Such changes are summarised in **Table 3.2** which is presented at the end of this chapter.

3.5 Conclusion

In this chapter I have attempted to cover sufficiently from various literature and studies on selected societies and cultures, synthesising it as far as possible and directing the diverse historical and social conceptual understandings as supporting evidence to the background of this study. The different features of giftedness as perceived and emphasised by various societies are also discussed. In specific, I have highlighted some challenges pertaining to having a consensus of definition or conception of giftedness and talented as well as identifying procedures in the United Kingdom. Also, through my discussion, with the scarcity of gifted studies in Malaysia, I have attempted to provide a clear description on the current scenario of gifted programs in Malaysia that serve as a background of my study. In general, the discussion also reflects the needs to have more gifted studies in line with the development of gifted education in Malaysia. In this regards, the findings from my study are aimed to provide additional information regarding the conception of giftedness and talented among primary school teachers[78] in Malaysia. Other than that, although it has been difficult to provide a clear and precise comparison among different societies on the conceptions of giftedness and talent, I have attempted to highlight the differences and similarities where possible. In the next chapter will

[78] In this instance, teachers refer to pre service and in service teachers.

explore conceptions of giftedness and talent as perceived by teachers, looking at the evidences from various studies.

Table 3.2: Perceptions of giftedness in different periods in Thailand

Period	Time frame	How giftedness is perceived?
1st	Ancient period (700,000-1st century)	• The emphasis is on extraordinary explicit performance such as in carpentry and hunting. • The development of talent was based on hands-on training from the elders or older generation.
2nd	1st century-1851	• Even though formal education was limited and only available only for selected groups of people such as the princes and princess, yet development of gifts and talents was based on apprentice system. • During this period, gender specification was prevalent in which activities such as carpentry was considered as male activity and sewing or weaving were considered as female activities. Thus, the apprenticeship was based on the activities and taught by respective elders with similar gender. • Like the previous era, explicit performance was still prevalent in this period of time.
3rd	1851-end of 20th century	• Even though Thailand was never been colonised unlike its neighbouring countries like Malaysia or Indonesia, yet the Western influences on the conceptions of giftedness among Thai people at this time could not be denied. • One of the influences was the growth of formal education to the lower class of people in the society. • The emphasis on the characteristics of giftedness has shifted from explicit performance to implicit performance as well. • Gifted students who excelled in subjects taught formally in schools such as mathematics and science were sent to western countries to further their education. These western educated gifted individuals were later on played important roles in bringing changes to the Thai society. • Excellent academic performance was one of the indicators of giftedness.
4th	Beginning of 21st century	• Due to globalisation, giftedness is equated more on intellectual abilities. • Outstanding academic achievement and performance are regarded as manifestations of giftedness. • With the emphasis on intellectual abilities, the use of psychometric assessments such as IQ tests as identifying mechanism is increasing.

*Source: Taken and adapted from Anuruthwong (2007).

Chapter 4: Teachers'[79] conceptions of giftedness and talent and its implications

4.1 Introduction

In this chapter, a review focusing on various studies on pre service/in service teachers' conceptions of giftedness and talent is attempted. As discussed in previous chapters, there is no consensus on the conception of giftedness as asserted by various researchers such as Robinson and Clinkenbeard (1998) and Hoge (1988). At theoretical level, giftedness is defined variedly and the emphases on various definitions are differed from one definition to another. Other than that, as presented in **Chapter 3**, studies have shown that different societies perceive giftedness somewhat differently. In this vein, it could be concluded that giftedness is a value laden psychosocial construct.

With different proposition of giftedness from theoretical and social perspectives, it is assumed that people such as teachers might have personal[80] conception of giftedness that somewhat different from any model or theory. This chapter is aimed to provide a background of this study specifically on the conceptions of giftedness by teachers as explored in other studies and thus, I divide the discussion on teachers' conceptions of giftedness and talent into five sections (**Section 4.2** to **4.6**). First, I would review studies on different conceptions of giftedness and talent as perceived by teachers in general.

Second, findings from studies focusing on conceptions of giftedness and talent in relation to teacher training and/or experience are reviewed. In this instance, even though there is no direct causal of teacher training and/or experience on the conceptions of giftedness and talent as perceived by teachers, yet studies have shown that teachers' conceptions of giftedness and talent are varied to certain extent (examples of studies by Guskin et al., 1992; Copenhaver and Intyre, 1992; Leavitt and Geake, 2009; Miller-Washington, 2010).

[79] In this review, studies on 'teachers' refer to studies involving pre service, in service or both groups on the conceptions of giftedness or specific characteristics of giftedness. To assist readers, general term such as 'teachers' would be used throughout this chapter to refer to both groups unless specified otherwise.

[80] It is not to say that one should have exactly similar understanding of any model or theory of giftedness. However, any discrepancy between personal understanding and operational definitions and/or conceptions of giftedness should be made aware prior to any nomination or assessment in order to provide appropriate arrangement of conditions (e.g. education provision, social interaction etc.) for future development. In the context of my study, it is hypothesised that the conception of giftedness by Malaysian teachers might slightly different from any model or theory of giftedness.

Third, in **Section 4.4**, I shall present a review on studies comparing conceptions of giftedness and talent as held by teachers in different countries (e.g. Busse et al., 1986; Ficici, 2003). A study that compared peers and teachers' view on giftedness is also presented in this section (e.g. Gagné, 1993). A review of such studies is aimed to uncover the differences and similarities that might exist among varied groups[81].

Following that, a review of studies focusing on reliability of teachers' nomination of gifted and talented students is presented. The discussion of this section focuses on studies exploring underlying factors that might influence teachers' nomination (see examples from studies by Hansen and Feldhusen, 1994; Hunsaker et al., 1997; Powell and Siegle, 2000).

Finally, I present a concluding discussion of this chapter by reiterating the main points of each section.

4.2 Teachers' conceptions of giftedness and talent: a general review

In this section, I aim to provide details on the varied conceptions of giftedness and talented that teachers hold based on review of some previous studies. With the available studies on teachers' conceptions of giftedness and talent, the discussion of this section would be divided into several sub-sections for : a) the discrepancy between teachers' view of giftedness and official definitions of giftedness (for example, please refer to a study by Hunsaker, 1994), (b) different emphases of certain characteristics of giftedness by teachers (examples of studies such as Cramond and Martin, 1987; Thomas, 2007; Galitis, 2009) and (c) teachers' classification of abilities according to varied ability domains (for example, please see a study by Guskin et al., 1988).

[81] Most of the studies reviewed in this chapter involving teachers (either pre service teachers, in service teachers or individuals who have previous teaching experience) except a study by Gagne (1993) which also involved peers. In this study, Gagne compared perception of peers and teachers on the characteristics of giftedness in relation to gender. See **Section 4.4** for more details.

4.2.1 Discrepancy between personal understanding and official definitions of giftedness and talent

In a study by Hunsaker (1994) [82] exploring how teachers nominated students for gifted programs, it was found that there is discrepancy between teachers' view and official definitions of giftedness that serve as a guideline for nomination. Hunsaker (1994) found that teachers' personal conception of giftedness contradict with the traits that they mentioned in nominating students as gifted. In his study, the most mentioned traits of gifted children by teachers are creativity/divergent thinking, convergent thinking ability, and curiosity. Yet, the traits that they mentioned most to nominate the students are classroom-performance traits such as outstanding academic achievement, good work habit and effortless learning. Hunsaker (1994) also found that teachers are not aware on the discrepancy of their conceptions of giftedness even though their schools adopted official definitions of giftedness by Marland (1971). With such guideline at hand, such variability still occurs and this would influence how the students are nominated for gifted programs (Hunsaker, 1994).

4.2.2 Different emphases of characteristics of giftedness and talent

Even though there are some commonly agreed characteristics of giftedness as proposed by various theorists such as extraordinary and/or above average ability (e.g. Renzulli, 1978; Sternberg and Zhang, 1995) and exceptional ability in one or more domains (e.g. Gardner, 1983; Heller, 2010), other characteristics of giftedness are defined, assessed and valued somewhat differently across culture. For example, in a study by Cramond and Martin (1987)[83] focusing on teachers' view on the likeability and/or social acceptance [84] in relation to

[82] In his study, Hunsaker (1994) used purposeful sampling involving nine participants. Document analysis, observations, interviews and questionnaire (based on individual's responses in interview) were used as the data collection methods. In interviews and questionnaire, teachers were asked about their experience in identifying gifted and talented students (how they notice the students etc.) as well as their personal conceptions of giftedness. In this vein, using more than one source of data, Hunsaker (1994) was able to investigate teachers' personal conception of giftedness in comparison with the official definitions of giftedness as adopted by their respective schools for the purpose of identification of gifted and talented students.

[83] The study by Cramond and Martin (1987) involved 100 pre service and 82 in service teachers (who enrolled at postgraduate education courses at the time of the study). In this study, Cramond and Martin (1987) adapted Tannenbaum's questionnaire which was developed in 1962 as research instrument (See Cramond and Martin (1987) for details).

specific characteristics of giftedness such as being studious and athleticism, it was found that teachers view the likeability of gifted students differently. According to Cramond and Martin (1987), gifted students who are non-studious and athletic are perceived to be more likable as compared to studious and nonathletic gifted students. In this vein, it was found that perceived characteristics of giftedness such as studiousness and athleticism and its combination are valued differently. In the same study, Cramond and Martin also explored the link between SAT scores and teachers' rating on behavioural characteristics -i.e. studious/ athleticism- also found that there was no relation between SAT scores with teachers' rating. This indicates that teachers' rating is based on their own perceptions and independent from students' actual intellectual ability. In summary, Cramond and Martin (1987) postulated that teachers' perceptions on characteristics of giftedness are not direct and to certain extent, it is subjective and thus, their view on socially more acceptable characteristics of giftedness could have implications on their teaching practice.

However, it is worth to note that people's view on gifted and talented might be transparent in such a way, it might influence how the gifted and talented react to people's view and expectations. In this regards, there could be instances where gifted and talented might try to downplay their abilities in order to gain social acceptance from people around them. In other words, the pressure to be accepted and valued by society makes gifted and talented to devalue or shun their extraordinary abilities. This is what has been found in a case study by Persson (2005) on a Swedish gifted pre service teacher.

In Persson's (2005) study, it was found that the pressure to gain societal acceptance made the gifted pre service teacher to downplay his extraordinary ability even though he is academically gifted. Persson (2005) further elaborated that by chance, this pre service teacher is also excelled in sports and thus, he could adopt an identity as a gifted athlete which makes him more socially acceptable. However, the pressure that he feels due to having dual identities -i.e. gifted in cognitive and sports- often leads him to conflict with academic staff as well as peers which depresses him. To decrease his ability, this pre service teacher even attempted to inhale toxic fumes with the hope that it might damage some of his brain cells which could lead to lessen his extraordinary abilities (which was unsuccessful).

[84] In this study by Cramond and Martin (1987), social acceptance is perceived a crucial element in determining how a gifted and talented individual is regarded in a society or how a gift or talent that gifted and talented individuals have is valued in a society.

Looking at the illustration in Persson's study show how a gifted individual is very much aware of his own abilities as well as societal expectations which in this case, might be difficult to comply. This is because, in Sweden, the Code of Jante[85] (to be like anyone else) is so prevalent in which to be exceptionally different is not highly valued at all times Due to this, teachers often perceive that it is essential for the students to be treated equally because each student has the right to receive meaningful education. This egalitarian view on education practice seems parallel with the Code of Jante which is strongly adhered by Swedish society as claimed by Persson (1998).

Other than likeability and/or social acceptance, in another study by Thomas (2008) focusing on general understanding of teachers on the characteristics that differentiate non-gifted and gifted students, it was found that teachers perceive that intelligence as one of the characteristics the gifted students from non-gifted students. In his study, Thomas also explored the difference between male and female teachers on their attribution of giftedness. It was found that female teachers tend to attribute effort and ability differently for gifted students based on their gender. It was found that female teachers attribute gifted male students' success more to ability, rather than effort and attribute gifted female students' success more to effort, rather than ability (Thomas, 2008). Even though it is perceived that gifted students -i.e. male and female- have similar intellectual capability, yet when it comes to measuring success or failure, ability is regarded to be 'male' attribute and effort is regarded to be 'female' attribute. In contrast, from teachers' responses when they were asked to attribute success of gifted students in general, it was found that they attribute gifted students' success based on effort. The contradictory findings in this study show that teachers might appear to have general unbiased conceptions of giftedness yet when it was investigated further through association of gender, it was found that female teachers hold gender bias conceptions of giftedness (Thomas, 2008). Similar findings were found in another study by Galitis (2009).

In a study by Galitis (2009) exploring teachers' nomination of gifted students, in general it was found that teachers favour male gifted students more as compared to female gifted students. Galitis (2009) found teachers recounted that male gifted students are more

[85] An illustration of the Code of Jante could be found in a novel by Aksel Sandemose (1936) called A fugitive crosses his tracks (translation).

noticeable and actively involved in class as compared to female gifted students. In her study, Galitis (2009) also discovered that some teachers are aware on this gender preference and thus, to avoid from being criticised as gender biased, they selected equal number of male and female students for gifted programs. In this regards, teachers tried to mask their bias conceptions of giftedness even though it was found to be futile due to contradictory of their actions in selecting students for gifted programs. It was observed that even though teachers held general characteristics of giftedness as stated in the list provide by the Department of Education, Australia, yet it was found that the characteristics tend to be associated with gender (Galitis, 2009). In describing characteristics of giftedness for gifted female students for identification purpose, Galitis found that teachers used to describe the female students in cautious and unbiased manner. This particular finding was similar in a study by Cribbs (2009) on African American.

According to Cribbs (2009), African American teachers responded variedly when describing the characteristics of gifted and talented students. It was found that some of them regard that gifted and talented students learn things easily and thus, could get bored easily if a task is considered to be too easy and/or less challenging. On the other hand, some of them perceive that gifted and talented students are independent in their learning and thus, they could always find challenging tasks themselves with little help from teachers and never get bored. The dissimilarities of conceptions held by teachers are found to influence the way they recognise students as gifted and talented in their classrooms.

Cribbs (2009) also found that teachers identify students as gifted and talented based on classroom performance which is similar in a previous study by Hunsaker (1994) (refer to the previous **Section 4.2.1** for details). For example, in Cribbs's (2009) study, teachers stated that they recognised students based on comparison between classroom observable behaviour and test scores. In this instance, students' behaviour and interaction in class are also among the observable characteristics in recognising the exceptionality of gifted and talented students. However, Cribbs (2009) discovered like the dissimilarity of general conceptions on giftedness, teachers are also not aware the discrepancy of their conceptions when they identify students as gifted and talented which has similar finding like a study by Hunsaker (1994). In summary, like Hunsaker (1994), Cribbs (2009) also found that since

different teachers emphasise different characteristics of giftedness, students could be easily misidentified if they exhibit characteristics that less valued by teachers.

Other than teachers, peers might have their own view on gifted and talented students. In another study by Gagné (1993) to compare the perceptions of peers and teachers on gender attribution on the characteristics of giftedness, it was found that peers and teachers held similar perceptions on some characteristics of giftedness[86] associated with gender. Gagné (1993) found that girls were perceived to possess more artistic and social attributes as compared to boys which were perceived to possess more physical and technical attributes. However, in this study, Gagné postulates that there could be bias judgment by peers and teachers on the characteristics of giftedness in association with gender and thus it might affect the overall information validity. In this vein, this finding is similar with previous study by Guskin et al. (1992) in which it was found that the association of gifted characteristics with personal characteristics such as gender, race and social background influence teachers perception on students with gifted and talented abilities. Other than that, Gagné (1993) also highlighted the possibility of lack of specific information about characteristics of giftedness which are not necessarily related to gender which in some cases are rarely shown in education setting. In this vein, Gagné (1993) suggested for further observation by teachers especially on gifted and talented students is needed before judging them based on their existing presumptions.

4.2.3 Classification and/or differentiation of abilities according to ability domains

In one study by Guskin et al. (1988) involving 111 pre service teachers and 79 graduate student who have teaching experience in schools, 20 different kinds of abilities[87] were presented in a questionnaire. Using cluster analysis, multidimensional scaling and factor

[86] In this study by Gagné (1993) involving more than two thousands participants (2,343 participants), Gagné classified 42 attributes into nine clusters of attributes: intellectual, creative, socioaffective, physical, academic, technical, artistic, interpersonal and underachievement attributes. Using Peer Nomination Form (PNF), Gagné explored how peers and teachers judge various attributes of gifted and talented students in school environment.

[87] In this study, Guskin (1988) used '*sorting, similarity rating and/or trait ratings*' (p. 216) to explore pre service and teachers' perceptions on certain abilities. The clusters of abilities which are similar with Gardner's (1983) multiple intelligences are: analytic abilities, social personality abilities, verbal abilities, motor abilities and creative arts abilities. Even though it is not exactly the same like Gardner's multiple intelligences, yet the findings from Guskin's (1988) show that teachers' view on various abilities are classified according to specific domains.

analysis, it was found that pre service and in service teachers view different kinds of abilities according to domain specification as proposed in Gardner's (1983; Gardner, 1993) multiple intelligences. In this study, Guskin et al. (1988) discovered that one of the reasons that pre service and in service teachers are similar in differentiating the ability domains might be due to previous learning or experience that they might have. In this vein, it is hypothesised that teachers are exposed and/or familiarised with Gardner's distinctions during teacher training. In this study, it was also found that teachers perceive that one domain of ability might not necessarily related to another domain. In this instance, even though teachers could avoid from having preconceptions that ability domains are closely related, yet '*there is the possibility of over differentiation on the parts of these teachers*' (Guskin et al., 1988, p. 218).

4.3 Teacher training and/or experience in relation to the conceptions of giftedness and talent

The effect of teacher training and/or experience might not be evident in influencing the conceptions of giftedness and talent that teachers hold yet it is commonly agreed that there might be difference between teachers who have no training in special course or program relating to giftedness or experience teaching gifted and talented students as compared to teachers with such training or experience. One of the methods to determine if any exposure on the conceptions of giftedness might change teachers' view on gifted and talented students, an experimental study might be needed and ideal approach. However, it might be inappropriate to assign some groups to certain controlled environment in which in this case, some teachers might have the opportunity to get more information and training about gifted program whereas some teachers might be left out from getting such treatment, for instance. Thus, to minimise any unfair treatment, another way to determine the difference between teachers might be through selecting those which certain criteria as exemplified by Guskin et al. (1992).

In their study, Guskin et al. (1992) selected participants based on these criteria: teachers who were undergoing teacher training (or pre service teachers), teachers who were attending graduate courses[88] and teachers who were teaching in middle schools. However,

[88] In this instance, this group of teachers was teachers who are attending special course for gifted education. It is assumed that this group of teachers has adequate teaching experience and also additional

Guskin et al. (1992) divided the groups into two: those without teaching experience (pre service teachers) and those with teaching experience (those who were attending graduate courses and those who were teaching middle schools). One of the findings in Guskin et al.'s (1992)[89] study revealed that both groups perceive that gifted and talented students who possess verbal, analytic and social abilities are perceived to be more successful than those who possess motor and creative abilities. In this vein, it shows that both groups favour and value specific attributes more as compared to others in judging future success of gifted and talented students. In this study, Guskin et al. (1992) also explored teachers' decision in assigning students to educational programs which suit with their abilities. It was found in both groups that there is less agreement in deciding the programs for the students. However, teachers recommend students with creative, analytic and verbal abilities more for special programs as compared to students with motor or social skills which received less recommendation from teachers (Guskin et al., 1992).

In addition, in this study, Guskin et al. (1992) also found that in comparing pre service and in service teachers in their judgment on educational provision based on students' abilities and needs, experienced in service teachers rated more cases than the pre service teachers. In this instance, it seems that teaching experience does influence teachers' rating and judgment on students' abilities especially social, analytic and verbal abilities as well as future educational provision. However, Guskin et al. (1992) discovered that there is no difference between pre service and in service teachers in terms of their rating of students with creative and motor abilities. In contrast, it was discovered that both groups of teachers associate personal characteristics with the characteristics of giftedness (Guskin et al., 1992). In summary, the diverse conceptions of characteristics of giftedness among teachers show that teachers have general understanding of giftedness even though the association of certain characteristics might be considered as gendered bias.

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opportunity to be exposed to more information about giftedness through the graduate courses that they were attending.

[89] In this study by Guskin (1992), 95 pre service teachers, 13 in service teachers (who were attending graduate courses) and 50 middle school teachers were involved. There were six booklets that contain six case descriptions of gifted and talented individuals each (thus, there were 36 cases). The participants were asked to rate 25 types of abilities. They were also asked to judge appropriate types of education provision as well as predict the success of pseudo individuals in varied cases presented in each booklet.

Unlike previous studies by Guskin and others (1988; Guskin et al., 1992) which used case description approach and rating questionnaire, Copenhaver and Intyre (1992) used open-ended questionnaire[90]. In their study, Copenhaver and Intyre (1992) explored 85 elementary and secondary teachers' perception of gifted students (based on their experience teaching gifted students). It was discovered that creative characteristics are listed most often by teachers with experience in teaching gifted students. Also, Copenhaver and Intyre (1992) found that negative characteristics associated with gifted students such as disobedience, easily get bored, etc. are varied depending on the duration of experience teaching gifted students. In this instance, it was found the longer the teaching experience teachers have, the less likely they associate negative characteristics with gifted students. In addition, Copenhaver and Intyre (1992) also found that the characteristics perceived as gifted are varied based on grade level taught by teachers. In summary, this study shows that differences in gifted characteristics listing are based on teaching experience and grade level taught by elementary and secondary teachers. Copenhaver and Intyre (1992) suggest that teachers who are assigned to teach gifted students should be given appropriate training as well as exposure with gifted students prior to teaching the students. This is to ensure that teachers are able to '*facilitate appropriate identification and diagnostic procedures*' (Copenhaver and Intyre, 1992, p. 153).

In a study by Hansen and Feldhusen (1994) on the adequacy of teacher training in gifted education to fulfil the needs of gifted and talented students, it was found that teachers who are trained in gifted education '*demonstrated greater teaching skills and developed more positive class climates*' (p. 115) as compared to teachers who are not specifically trained in gifted education. In this study, it was also found that students perceived the trained and non-trained teachers differently in terms of the classroom climates. Hansen and Feldhusen (1994) also discovered that students claimed that they were more motivated to learn in classroom by trained teachers. In summary of this study, it could be assumed that due to specific teaching training in gifted education, teachers are more prepared to fulfil gifted and talented students need in which in this study, it was also found that teachers are more supportive towards programs for the gifted and talented students.

[90] In their study, Copenhaver and Intyre (1992) distributed open-ended questionnaire to the 85 participants. The main question asked in the questionnaire was: what are the characteristics that come to their mind when they think of gifted students. Participants were also asked to rank the characteristics that they have listed. Copenhaver and Intyre (1992) used Mann-Whitney approach to analyse the ranks.

In another study on Lithuanian teachers' conceptions of giftedness (2009; Leavitt, 2009) it was discovered that after attending a Professional Development (PD) programme on giftedness, Lithuanian teachers' definitions of giftedness are more refined in which they acknowledged that giftedness could be perceived in general as well as specific domains. A general definition was derived as a result of the programme in which teachers define a gifted child as *'a gifted child or teenager who has higher than average intellectual (general and/or special) abilities, is creative and differs from his peers (having the same school environment) in performing tasks in an original and productive way'* (Leavitt and Geake, 2009, p. 141).

In addition to the general definition, teachers acknowledged that gifted and talented students could be gifted in specific domain only. Even though this is not a part of the general definition developed from the PD programme, in their study, Leavitt and Geake (2009) found that teachers are aware on the needs to use multiple approaches in identifying gifted and talented students. Nevertheless, according to Leavitt and Geake (2009), the definition is later used by teachers as an initial attempt to systematically identify[91] students for gifted programme. In this instance, Leavitt and Geake found that by using the definition as a guideline in the identification of gifted and talented students, it seems that teachers are aware on the need for systematic process to identify gifted and talented students which should not be based on their intuition or observation alone.

In a study by Miller-Washington (2010) on African American teachers' perception on gifted and talented students shows that teachers emphasise on specific characteristics of giftedness -e.g. advanced observable behaviour- when they describe students as gifted and talented such as advanced mathematic ability, unusual curiosity level, problem solving and verbal ability. However, in this study, Miller-Washington (2010) found that nearly half (48.1%) of the students that initially identified as gifted and talented by teachers were found to be unsuccessful for further gifted testing. In this vein, even though teacher could be perceived as initial referral agent, yet further assessment using psychometric assessments are needed to confirm the identification of gifted and talented students.

[91] One of the initiatives taken by teachers is to develop an identification form or checklist that can be used by parents, peers or students in identifying characteristics of giftedness (Leavitt and Geake, 2009). For details, refer to Leavitt (2009) and Leavitt and Geake (2009).

In addition to the above studies, a study by Bianco and Leech (2010) involving 277 teachers of three groups (special education teachers, general education teachers and gifted education teachers) in nominating gifted and talented students with or without disability label to a gifted program reveals that teachers nominate less gifted and talented students with disabilities as compared to students with no disabilities. This result was consistent in all three groups of teachers. In addition, it was found that teachers' decisions to nominate students are primarily influenced by their teaching specialisations and their perceptions of students with or without disabilities. It was found that teachers with specialisation in special education nominate fewer students with or without disability label to a gifted program as compared to the other two groups of teachers: a) general education and b) gifted education specialisation.

4.4 The conceptions of giftedness and talent by teachers in different countries: a review

In this section, I shall provide evident comparison of teachers' conceptions of giftedness across societies and cultures. In general, it may appear that any difference is expected. However, it is worth to look at the difference and similarity of conceptions of giftedness which teachers from different societies and/or cultures hold especially on characteristics of giftedness. Some studies that explored the issue of social and cultural difference used two or more different groups of teachers from different societies or countries.

To begin with, in a study by Busse et al. (1986)[92] on 434 American and 446 West Germany teachers on their perceptions of gifted and talented students, it was found that American teachers tend to estimate their students as gifted and talented more as compared to West Germany teachers in general. Also, it was found that American and West Germany teachers perceive that gifted boys are more self-centered, arrogant and neurotic as compared to gifted girls. Busse et al. (1986) also found that male teachers tend to perceive gifted boys

[92] Busse et al. (1986) used questionnaire that contains 83 characteristics of giftedness. From factor analyses (they used a separate analysis for each group); there were seven factors extracted for the German group and five factors for the American group. From two separate analyses, it was found that German teachers perceive gifted and talented students somewhat differently from the American teachers. A finding from this study shown that the factor of intelligence as single factor as demonstrated by the American group are different from the German group in which there are two factors (logical problem solving and verbal proficient). In this regards, it could be assumed that the German teachers perceive logical problem solving differently as verbal proficient. Thus, the items under both categories were loaded in two separate factors as compared to the American group.

more favourably than gifted girls and similar findings were found with female teachers who favour more gifted girls as compared to gifted boys. These findings relate to the teaching field too in which it was found that teachers teaching science related subjects tend to perceive more boys are gifted in science subjects such as math or physics as compared to gifted girls (Busse et al., 1986). In summary, the study by Busse et al. (1986) found that teachers view differently gifted and talented students based on their gender and this is also related to how they perceive subject related giftedness in relation to the student's gender.

In another study to explore teachers' conceptions of giftedness which primarily emphasis on mathematics giftedness Ficici (2003) was found that there are dissimilar understanding on the characteristics of gifted mathematic students among teachers in three countries (South Korea, Turkey and the United States). In his study, Ficici (2003) found that the teachers in Turkey value School Smart Mathematics Students, Mathematics Perspectives for the Real World and Creative Problem Solvers[93]. He found that teachers in the United States value the characteristics classified as Creative Problem Solvers and Mathematics Perspectives for the Real World whereas in South Korea, teachers value only one classified characteristic which is known as Creative Problem Solvers.

In Ficici's (2003) study, it was also found that male teachers value less than female teachers for Mathematics Perspectives for the Real World. There are also differences among teachers with different education qualification and teaching experience. It was found that teachers who had higher degrees more likely to value Creative Problem Solvers and Mathematics Perspectives. For the United States, it was found that more experienced teachers tend to value more Creative Problem Solvers than the inexperienced teachers. Such differences in terms of their conceptions of mathematics giftedness influence their perceptions on the teaching strategies use in classrooms. According to Ficici (2003) South Korean teachers value 'practicing in class' such as solving more mathematical problems as compared to teachers in the United States and Turkey. In this instance, the adage of 'practice makes perfect' seems perfect to illustrate this notion for the South Korean teachers. In contrast, in the United

[93] There are three components (from factor analysis) of gifted mathematics student characteristics: School Smart Mathematics Students, Mathematics Perspectives for the Real World and Creative Problem Solver. However, specific characteristics of gifted mathematics student under each component are not stated in details anywhere in Ficici's (2003) thesis. Thus, in this chapter, a review of Ficici's (2003) study would retain the terms used from his writing.

States, teachers strongly perceive that the ability to understand mathematics better is an innate characteristic of gifted mathematics students and thus, those students are assumed to thrive with minimal mathematic practice.

4.5 Teachers' conceptions of giftedness and talent: reliability of teachers' nomination[94] of gifted and talented students

In general, as a part of students' assessments, teachers might be asked to rate and in some cases to nominate students for various purposes. Although researchers argue on the qualification of teachers to identify students as gifted and talented (Pegnato and Birch, 1959; Jacobs, 1971; Hoge and Cudmore, 1986; Gagné, 1994) yet some studies have found that teachers' conceptions of giftedness influence the way they nominate students for gifted testing or identify students as gifted and talented.

The study by Pegnato and Birch (1959) was cited in numerous articles for the last 50 years (e.g. Houtz et al., 1983; Hollinger and Kosek, 1985; Borland and Wright, 1994; Hunsaker et al., 1997; Ford et al., 2008; Peters and Gentry, 2010) as supporting evidence that teachers are not reliable in nominating or identifying students as gifted and talented. A review by Gagné (1994) on Pegnato and Birch's study criticised the methods used by Pegnato and Birch (1959) on the measures of effectiveness and efficiency in screening procedures to identify gifted students. Gagné (1994) reanalysed data from Pegnato and Birch's study and from the reanalysis of the data using a phi coefficient revealed that '*the teachers do not come out worse than most other sources of information, including some subgroups of the Otis*' (Gagné, 1994, p. 126). In this vein, from Gagné's review, it could be concluded that even though teachers' rating or nomination might not be reliable, yet to certain extent it worth to note that if they are given appropriate training, they could provide valuable information about gifted and talented students for future referral (e.g. Starko and Schack, 1989; Hansen and Feldhusen, 1994; Tomlinson et al., 1994; Siegle et al., 2010).

In another similar review by Hoge and Cudmore (1986) reveals that teachers' judgement is not a poor measure to identify students as gifted as claimed by Pegnato and Birch (1959). In

[94] In my study, I attempted to explore teachers' understanding on identifying procedure and/or assessments (such as the various types of assessments used in the identification process). Questions were asked in both semi-structured questionnaire and interview (see **Chapter 5 – Section 5.4.2.3**).

their study, Hoge and Cudmore (1986) compared the findings of twenty two studies on the effectiveness and efficiency of a variety of tools such as intelligence tests, creativity assessments, and achievement tests in identifying gifted students based on teachers' rating and nomination. All of the studies investigated by Hoge and Cudmore (1986) used different kind of psychometric tools as well as teachers' judgement which could be either teachers' rating or nomination and thus, they claimed that '*psychometric qualities of these judgemental measures have been neither extensively nor adequately tested*' (p. 191). In addition, Hoge and Cudmore (1986) claimed that the assessment used to identify gifted students should be parallel with teachers' rating or nomination based on specific characteristics of giftedness. For example, if teachers' judgment is based on intelligence, then intelligence tests should be used as psychometric assessments to identify or confirm teachers' initial judgement.

Pyryt (2004) used data from Pegnato and Birch's study (1959) and reanalysed it using discriminant analysis to prove the effectiveness and efficiency of screening procedures to identify gifted students. In addition, Pyryt (2004) highlighted that definition of giftedness in Pegnato and Birch's study (1959) is closely related to intelligence scores and thus, teachers' rating and nomination that might focus on different characteristics of giftedness such as creativity would lead to low correlation on the effectiveness and efficiency of assessments used which are not covered in Pegnato and Birch's study (1959). In his review of Pegnato and Birch's study (1959), Pyryt (2004) found that students who score high on group IQ tests and achievement tests would most likely identified as gifted[95] as asserted previously by Pegnato and Birch (1959).

A study by Hunsaker et al. (1997) on teachers' nomination on students who are from culturally diverse and/or low income revealed that teachers rates students based on the general and specific characteristics of giftedness. However, teachers in this study by Hunsaker et al. (1997) were trained to recognise students with general and specific characteristics of giftedness. In addition, there was no comparison of trained and non-trained teachers in this study and thus, it is unknown how far the training influences teachers' understanding on giftedness. In this study, the aim was to test whether teachers'

[95] This proves Pyryt's (2004) proposition that Pegnato and Birch's (1959) study focus on a characteristic of giftedness which is intelligence.

nomination fit with theoretical ascribed characteristics of giftedness. The assessments used in nominating the students are based on multiple sources such as teachers' rating, creativity tests and writing assessments (Hunsaker et al., 1997).

Hunsaker et al. (1997) also found that teachers tend to rate students higher whom they believe would be successful in gifted programs -i.e. due to their nomination-. In this vein, they postulated whether teachers emphasise on characteristics related to academic performance more in nominating the students for gifted programs. However, despite the emphasis on characteristics related to academic performance, it was discovered that creativity as well as social skills are characteristics that contribute to the success of students attending gifted programs (Hunsaker et al, 1997). In addition, Hunsaker et al. (1997) proposed that teachers' ability to nominate students effectively in this study are due to the training and exposure that teachers receive prior to the nomination, the condition of teachers' rating assessment used in this study as well as the specification of conditions for the teachers to nominate the students[96].

In this vein, it shows that the identification process requires the participation of experts in gifted education to provide reliable evaluation related to their expertise in gifted education. In a study by Powell and Siegle (2000), even though it was found that there are similar rating between teachers and gifted and talented specialists for students who they perceived as producing avid readers, yet it was discovered that gifted and talented specialists rate gifted and talented students higher than teachers in general. Powell and Siegle (2000) proposed that perhaps gifted and talented specialists deal frequently with gifted and talented students, thus their conceptions and understanding on general and specific characteristics of giftedness is somewhat more accurate.

Other than that, even though Powell and Siegle (2000) do not stated this assumption specifically in their study, it could also be possible that gifted and talented specialists were trained specifically and thus, their training could provide better exposure in dealing with gifted and talented students. This is because Powell and Siegle (2000) proposed for

[96] In this sense, teachers are aware of the requirement for the assessments which based on their understandings of giftedness (which have been exposed in specific training on the characteristics of giftedness). For details, refer to Hunsaker et al. (1997).

appropriate training for teachers to understand the characteristics of giftedness better and avoid stereotype students who they might identify as gifted and talented.

In another study by Siegle and Powell (2004) involving 92 educators (58 teachers and 34 gifted and talented experts[97]), they used twelve student profiles[98] to explore educators' perceptions of student characteristics about math proficiency, reading and knowledge base in nominating the students for gifted programs. The three main characteristics were further divided into two sub-categories[99]. The first category is math proficiency is divided into two sub-categories which are problem-solving and computation. For reading, Siegle and Powell (2004) divided the students into avid and not interested reader. Lastly, for knowledge base the students were divided into single focus and broad category. In this study, it was found that educators' nomination of the students based on their categories is varied[100].

Siegle and Powell (2004) discovered that students who complete schoolwork received high rating for all the characteristics in general. However, it was found that some characteristics are perceived somewhat differently by educators. For example, it was found that educators perceive that gifted and talented students as avid readers. Educators were also found to be more inclined to perceive gifted and talented students as having mental computation ability even though the students are not producers (e.g. did no complete schoolwork). Also, it was found that educators perceive that single-interest in a topic is characterised as an indication of giftedness. However, it was found that the topics of interest do influence teachers' overall notion of single interest[101]. In general, it was found that teachers are more inclined to focus on students' weakness as compared to the experts. In this article, Siegle and Powell (2004) emphasised again the importance of teacher training in recognising characteristics of gifted and talented students in relation to assigning programs for the students.

[97] They did not provide any detail description of the experts involved in this study.

[98] The student profiles contain descriptions of three characteristics (math proficiency, reading and knowledge base) and did not contain any description relating to ethnicity, socioeconomic status and test scores. However, each student is introduced by using Anglo name. See Siegle and Powell (2004) for an example of a student profile.

[99] The sub-categories were further divided into producer and non-producer. Producer refers to students who complete schoolwork. Schoolwork completion is perceived as a product in itself.

[100] However, the variations that might exist are not explored in this study and Siegle and Powell (2004) suggested for future study on this aspect.

[101] As an example, student profiles which state a topic of dinosaurs are rated lower even though they are producers as compared to single-interest in a topic of aviation.

In a recent study by Siegle et al. (2010), it was found that personal characteristics of gifted students such as interests, socioeconomic status (SES) and domains of exceptionality influenced teachers' conceptions of giftedness and thus, those aspects are taken into consideration in nominating students for gifted programs. In this study, it is suggested that prior to nomination, it is crucial to know the conceptions of giftedness as held by teachers in order to minimise any potential bias nomination.

4.6 School labelling[102]: a general notion about gifted and talented students

According to Zimmerman (1985), there are limited studies on labelling gifted and talented as compared to studies '*in the area of labelling the handicapped*' (p. 31). In his article, Zimmerman further asserts that labelling relates to these aspects[103]:

- *how* one is defined as gifted and talented
- *who* decide the characteristics of giftedness[104]
- *what* are the consequences of labelling
- under *what* consequences labelling might be beneficial and/or successful

Based on his exploration of theories of labelling, Zimmerman claims that Schur's (1971) theory is the most relevant in explaining labelling of gifted and talented. Like how individuals with deviant behaviours are labelled, individuals with gifts or talents are labelled in similar way in which to certain extent '*labelling is tied to a number of sociological*

[102] School labeling is coined by Cross et al. (1993) which could be referred to any labeling related to students in relation to school setting. Being in mind that the interaction of gifted and talented students with others however, does not being limited to school setting alone. In the context of gifted studies, school labeling studies might be related to how others -e.g. teachers, parents, friends, peers or siblings- view students and students view themselves as gifted and talented (including how they view others perceive them as gifted and talented too). The school labeling studies might also include on the effect of labeling students as gifted and talented (e.g. Cross et al., 1993; Moulton et al., 1998).

[103] Zimmerman (1985) borrowed these assertions from four theories of labeling deviance from the field of sociology. In his article, he stated four theories of labeling deviance from these references: Becker's (1963) Outsider: Studies in the sociology of deviance, Lemert's (1951) Social pathology, Scheff's (1966) Being mentally ill: A sociological theory and Schur's (1971) Labelling deviant behavior: Its sociological implications.

[104] In this instance, the question of who decide the characteristics of giftedness relates to how experts, teachers, parents, peers and gifted and talented themselves perceive the characteristics of giftedness. It is a complex interplay process involves in determining the characteristics of giftedness in a particular context. In this respect, even though some of the characteristics are theoretically based (which could be found in any model or theory of giftedness) and might be assessed using psychometric assessments, yet it is commonly agreed among researchers that the way the characteristics of giftedness is viewed lies at the way how others perceive it and gifted and talented individuals perceive it themselves (e.g. Zimmerman, 1985; Hickey and Toth, 1990; Gates, 2010).

orientations' (p. 34) such as social definitions of gifted and talented. As previously asserted by Zimmerman (1985) on the lacking of studies on labelling gifted and talented, this could be attributed to another proposition by Hickey and Toth (1990) that '*the gifted and talented label is often seen as a mixed blessing*' (p. 149). In this study, it is attempted to explore how teachers view labelling students as gifted and talented.

In the context of this study, a review on studies on teachers' view[105] of labelling gifted and talented students might be ideal to suit with one of the research aim and question posed in this study. Even though there is no evident study on the teachers' view on labelling students as gifted and talented, similar studies could be found on school labelling in general such as teachers' perception of giftedness in relation to nominating students for gifted programs (as discussed in previous section – **Section 4.5**), teachers' perception of gifted and talented students in relation to students' academic achievement (e.g. Alvidrez and Weinstein, 1999), and teachers' attitudes towards students in relation to self-fulfilling prophecy (e.g. Madon et al., 1997; Smith et al., 1999). Other than studies as mentioned above, studies on school labelling also include studies such as the perceptions of gifted and talented students toward being labelled as such (e.g. Hershey and Oliver, 1988; Cross et al., 1993; Moulton et al., 1998; Berlin, 2009). In addition, studies on labelling students as gifted and talented also involve how parents and siblings view on the labelling (e.g. Fisher, 1981; Colangelo and Brower, 1987b).

From various studies on school labelling, among the common findings and suggestions by researchers could be summarised as the following:

- Gifted and talented students are aware how others perceive them and such awareness might influence how they perceive themselves being gifted and talented (Guskin et al., 1986) (e.g. Guskin et al., 1986; Hershey and Oliver, 1988; Cross et al., 1993; Berlin, 2009)

[105] There are numerous studies on labeling students as gifted and talented in general. However, there is no study to investigate teachers' perception on labeling students as such. In this regards, such studies might be too specific in one sense and in general, it is commonly understood that labeling is associated with social expectation, value and function. Therefore, studies on teachers view on labeling are commonly related to another aspects or process such as nomination of students, teacher training programs or courses and such. In this regards, teachers view on labeling might be masked within the aspects understudy.

- Gifted and talented students perceive that parents and teachers have higher expectations on them toward being gifted and talented (e.g. Hershey and Oliver, 1988; Cross et al., 1993);
- Labelling leads to mixed feelings and/or perceptions (positive and negative) by gifted and talented students (e.g. Hershey and Oliver, 1988; Cross et al., 1993; Moulton et al., 1998) as well as by others such as parents and siblings (e.g. Fisher, 1981; Colangelo and Brower, 1987a; Colangelo and Brower, 1987b; Berlin, 2009);
- Social experience could provide double edged influence on gifted and talented students in general (e.g. Cross et al., 1993);

With these findings and suggestions in mind, it is quite evident the concerns raised by researchers on teachers' view on gifted and talented students or how their perception or label colour students' perception on their abilities and talents. In line with the aims of providing beneficial education experience to students in general, teachers view on their own teaching practice such as their perceptions on gifted and talented students might need to be explored more given the fact that the existing studies which address these issues are still lacking as suggested by Cross et al. (1993) and Gates (2010). This is because after all teachers '*are the only professional people most children come in contact with'* (Epstein, 1953, p. 29).

4.7 Conclusion

In this chapter, by looking at findings of various studies, it could be summarised that giftedness is a concept that teachers perceive that they might understand it intuitively yet when they are asked on it further, they might find it hard to explain giftedness and they might perceive it as a complicated concept. From the models or theories as presented in **Chapter 2** and **3**, giftedness comprises of multifaceted characteristics and thus, some of the characteristics might be less emphasised than the others. The dissimilar emphasis could be due to different social and cultural values and thus, it is hard to justify and rely on specific model or theory without any careful consideration.

In relation to teachers, teachers might be generally assumed to understand the multifaceted characteristics of giftedness yet studies have shown that teachers' view might be slightly different from any theoretical and/or official definition of giftedness. Such instances could

be seen from various studies in different countries and societies. In addition, instances of teachers' different notions of giftedness (such as the characteristics of gifted and talented) could be discovered when they were asked to nominate students for gifted program as found in various studies discussed in this chapter. Other than that, regardless of limited studies on teachers' view of labelling, a review on similar studies have been attempted even though it is not directly related to the aim and research questions posed in this study.

From previous studies discussed in this chapter, it could be summarised that researchers used more than one approach to investigate teachers' conceptions of giftedness and talent. Some studies primarily used either qualitative or quantitative approach. Others used mixed approach by combining two approaches in investigating teachers' conceptions of giftedness and talent. There were various analyses adapted in various studies and few used factor analyses (e.g. Busse et al., 1986; Guskin et al., 1988; Ficici, 2003) to discover the pattern structures or components in which represent characteristics of giftedness. Looking at the various approaches of data collection and analyses gives me an insight of conducting my own study exploring the conception of giftedness and talent in Malaysia.

In summary, combined with discussion in **Chapter 2** and **3**, the overall review on the conceptions of giftedness and talent from the existing literature has been attempted. The next five chapters each relate to a different aspect of this study. The first of five chapters deals directly with the research methodology used in this study.

Chapter 5: Research framework and methodology

5.1 Introduction

The previous chapters have reviewed in detail and synthesised the literature related to conceptions of gifted and talented students which are primarily based on western conceptions of giftedness. Review of research findings of various studies conducted in different cultures presents variation of conceptions of gifted and talented from western perspectives. In the present chapter, elaboration of the research framework and methodology used to investigate the conception of pre service and in service primary school teachers on gifted and talented is presented. In particular, the empirical part of the study aims to provide answers to six research questions as first presented in **Chapter 1**. A summary of the research questions, designs, instruments and analyses is provided in **Table 5.1.**

5.2 A glimpse of teachers education programs in Malaysia: sampling rationale

In Malaysia, there are nine universities offering bachelor in education. The programs offered are Bachelor in early child education, primary and secondary education. Before July 2006, there were five universities offering bachelor degrees in primary education. In 2006, the Ministry of Education Malaysia changed one of its policies in which bachelor program in primary education would be offered mainly by the Institutes of Teacher Education (which previously known as Teachers' Training Colleges) and bachelor program in secondary education would be offered by universities which already have its own faculty of education.

For the bachelor program in early child education, there are two universities that still offer such program which are Universiti Malaya and Universiti Pendidikan Sultan Idris (UPSI). However, other faculty of education in various universities still cater for specialised programs such as a one-off collaboration program with any one of the Institutes of Teacher Education. For example, UTM is involved in such collaboration with Aminuddin Baki Institute of Teacher Education which started in 2006. The program is known as Special Graduate Teachers Program (PKGB). The duration of the program is three years (like normal bachelor program in Malaysia).

The variation of collaboration programs offered by universities and institutes of teacher education in Malaysia is meant for increasing number of teachers due to specific aims and needs. With the advancement in technology as well as needs, it is viewed as essential to have more graduate primary school teachers in Malaysia. Currently, with the aims of increasing numbers of graduate primary school teachers such collaborative programs are offered from time to time apart from the existing programs which are offered by the faculty of education in various universities.

The collaborative programs are implemented due to the fact that there are more teaching staff with a PhD in universities as compared with institutes of teacher education. Since the implementation of the collaborative program, there are an increased numbers of graduate primary school teachers in Malaysia. In 2007, the number of trained graduate primary school teachers in Malaysia are 27 768 teachers (EPRD, 2008, p. 53). With the current practice and programs that are offered (including one-off programs) the numbers of graduate primary school teachers have increased to 37 608 in 2008 (EPRD, 2009) (see **Appendix 11**).

However, to date there is no bachelor program in gifted education offered in any of the tertiary education institutions. This omission is due to the fact that there is no gifted education in Malaysia other than special programs for gifted and talented students which are conducted by one of the local universities in Malaysia (see **Chapter 3** – **Section 3.3** for details). This study explores the conception of giftedness and talent by pre service and in service primary school teachers. The exploration aims to look at the current conceptions of giftedness and talent by teachers despite the limited nature of gifted programs and studies in Malaysia as previously mentioned in **Chapter 1** and **3**.

Table 5.1: Summary of research questions and instruments

Research question	Research instrument
1. What are the conceptions of gifted and talented among pre service and in service teachers in Malaysia?	Survey (60 items) Semi structured questionnaire (open-ended questions) Item no. 1, 2, 3, 4, and 5 Interview Item no. 1 and 2
2. Is there any difference in the conceptions of giftedness among pre service and in service teachers in Malaysia?	Survey (60 items) Semi structured questionnaire (open-ended questions) Item no. 6 Interview Item no. 1 and 2
3. How do Malaysian pre service and in service teachers arrive at the conceptions of giftedness? a) What are the sources of information about giftedness according to them? b) How adequate the information in helping them to understand the concepts and issues related to giftedness?	Semi structured questionnaire (open-ended questions) Item no. 9 (source) Interview Item no. 4 and 6 (source) Item no. 5 (adequacy)
4. Are pre service and in service teachers confident in identifying students as gifted and talented?	Semi structured questionnaire (open-ended questions) Item no. 11 (confident) Interview Item no. 9 and 10 (rank and reasons for confidence level that they stated)
5. How aware do pre service and in service teachers about identification procedure and/or assessments in identifying gifted and talented students?	Semi structured questionnaire (open-ended questions) Item no. 13 (criteria for assessment) Interview Item no. 12 (type of assessment)
6. How do pre service and in service teachers perceive these issues: a) Intriguing aspects about gifted and talented individuals? b) Adequacy of teaching training? c) Labelling? d) Important aspects in developing gifted education in Malaysia?	Semi structured questionnaire (open-ended questions) Item no. 7 and 8 (intriguing aspects) Item no. 10 and 14 (adequacy) Item no. 12 (labelling) Item no. 15 (development) Interview Item no. 3 (intriguing aspects) Item no. 7 (pre service); no. 8 (in service) (adequacy) Item no. 11 (labelling) Item no. 14 (development)

5.3 Using a mixed methods research

In order to investigate the conception of giftedness and talent among pre service and in service teachers in Malaysia, a mixed methods research (Tashakkori and Teddlie, 1998; Tashakkori and Teddlie, 2003) is adopted in this study. According to Johnson and Onwuegbuzie (2004) a mixed methods research allows researchers to adopt multiple approaches in a study and thus, it is a less dogmatic design from an epistemological point of view. In emphasising their proposition, they further explain the benefits of using mixed methods design as follows:

> '*It is inclusive, pluralistic, and complementary, and it suggests that researchers take an eclectic approach to method selection and the thinking about and conduct of research…. Many research questions and combinations of questions are best and most fully answered through mixed research questions'* (Johnson and Onwuegbuzie, 2004, p. 17-18).

In this study, the research questions that are posed necessitate the data to be collected using quantitative and qualitative approaches and thus to be analysed later on using both quantitative and qualitative analyses respectively (refer to **Table 5.1**). This is in line with the general agreement among mixed method researchers that a mixed methods research is driven by purposes and questions aimed and posed in a study (Greene, 2008). However, this proposition could be interpreted as suggesting that using a mixed methods research allow researchers to choose any method as long as it could help to answer the questions posed in a study (Denscombe, 2008; Feilzer, 2010), yet a mixed methods research can be a powerful approach to provide 'abductive reasoning'[106] in exploring and assessing a phenomenon (Morgan, 2007, p. 71). In addition, a mixed methods research is also regarded as appropriate in investigating variations of participants' responses quantitatively and qualitatively as contended by Bergman (2010).

[106] According to Morgan (2007), abductive reasoning mediates between deductive (quantitative) and inductive (qualitative) reasoning in which it provides an alternative to explore and assess a phenomenon. In this instance, rather than exploring a phenomenon using one particular approach either objective or subjective, abjuctive reasoning as 'an intersubjective approach captures this duality' (Morgan, 2007, p. 71-72).

By having quantitative and qualitative elements that anchor its research paradigm, a mixed methods research is commonly associated with pragmatism (Tashakkori and Teddlie, 1998; Johnson and Onwuegbuzie, 2004; Creswell and Plano Clark, 2007; Greene, 2008; Teddlie and Tashakkori, 2009). In recent years, various researchers proposed that a mixed methods research is a research paradigm of its own in which it coexists with the other two established paradigms, the quantitative and qualitative (Tashakkori and Teddlie, 1998; Johnson and Onwuegbuzie, 2004; Creswell and Plano Clark, 2007; Morgan, 2007; Greene, 2008; Teddlie and Tashakkori, 2009).

According to Denscombe (2008), a mixed methods research is partnered with pragmatism as its philosophical basis due to three reasons. First, pragmatism allows the fusion of two different methods which have different philosophical underpinnings (Denscombe, 2008). Second, Denscombe claims that it provides with an alternative approach to researchers who want to have two elements of quantitative and qualitative approach in their study. Third, as 'a new orthodoxy' (Denscombe, 2008, p. 274), it makes a mixed methods design a more desirable approach to answer questions posed in a study.

In this study, following the principle of pragmatism as explained by Descombe (2007), the exploration of the perceived conception of giftedness and talent could be divided into two: breadth and depth. The breadth of this study involves using a quantitative approach in which large samples were used to explore wider aspects in the perceived conception of giftedness and talent. Empirical quantitative data allows me to deduce the findings specifically from targeted populations of my sampling. Principal Component Analysis (PCA) is used to yield pattern structures of the perceived conception of giftedness and talent as perceived by pre service and in service teachers.

In addition, depth implies narrow exploration of the perceived conception of giftedness and talent from smaller scale of sampling with small number of participants which might provide rich and unstructured data (from open-ended interview responses). In this study, my own conceptual understanding of giftedness formed prior to this study takes meaning and refines reiteratively during the interviews as the participants share their views on giftedness. From this process, a new understanding of the perceived conception of giftedness and talent is formed and presented in later chapters (see **Chapter 7** and **Chapter 8**). This is line with the

proposition by Dellinger and Leech (2007) who pointed out that a researcher's conceptual definition might be negotiated with meanings derive from participants' views and thus, it is important for a researcher to find the meanings of the data and how those meanings are intertwined.

In finding the meanings or interpreting the data from quantitative and qualitative methods, there are a number of ways this can be achieved. For example, data from quantitative and qualitative methods could be integrated and analysed at analysis level (Creswell and Plano Clark, 2007). In this instance, a researcher is usually left with decision to find and make sense of the patterns from the integration of both findings (Jick, 1979; Moran-Ellis et al., 2006). Other than integration of data, triangulation also can be used as a means to interpret data from quantitative and qualitative methods (Greene and McClintock, 1985). However, in this study data integration is adopted rather than data triangulation because the use of mixed methods is aimed to enhance the breadth and depth of data generated as proposed by Sieber (1973).

Greene et al. (1989) illustrate four instances of mixed methods which do not involve triangulation: 1) the use of one method to clarify another method (complimentary), 2) the development of one method from the findings of another method (development), 3) the use of findings from mixed methods to widen the perspectives of inquiry paradigms (initiation), and 4) the use of mixed methods to expand the breadth and depth of inquiry (expansion). In this instance, even though the third and fourth instances as proposed by Greene et al. (1989) might be perceived as having similar aims, yet they are different from the third instance, initiation which specifically aims '*to uncover paradox and contradiction*' (Greene et al., 1989, p. 268) and the fourth instance, expansion is aimed at extending '*the scope, breadth, and range of inquiry by using different methods for different inquiry components*' (Greene et al., 1989, p. 269).

In this study, Greene et al.'s (1989) proposition of extension is employed. In summary, this study aims at investigating the perceived conception of giftedness and talent as held by pre service and in service teachers in general and specific. Other than that, issues related to the perceived conception of giftedness and talent that are not currently studied in Malaysia are also explored and thus, the used of a mixed methods research aims to expand the topic

under study. In this vein, survey, open-ended questionnaires as well as interview were adopted as the means for the data collection in this study. The used of three instruments are meant to answer the research questions posed as presented in **Table 5.1**.

5.4 Research design: phases

In this section, the discussion will concentrate on the development of research design. The phases reflect different aspects of this study.

5.4.1 Research phases

In general, there are six phases of the research design involved in this study (see **Figure 5.3**). Phases III to VI comprise of three stages of studies: pre pilot, pilot and the main study which reflects a multiphase mixed methods design adopted in this study. A multiphase design is deemed appropriate for this study because '*it combines both sequential and concurrent strands over a period of time*' (Creswell and Plano Clark, 2011, p. 196) of a study. An overview of each study is presented in the following sub-section (**Section 5.4.1.1** to **5.4.1.3**).

Phase I This began with the literature review which served not only to find relevant sources of previous studies that support the research undertaking but also to provide relevant references in the development of research instrument used in this study especially the structured questionnaire. This is because the structured questionnaire was developed from a theoretical basis as there is no questionnaire about the conceptions of giftedness available to adapt for to Malaysian context. Thus, each item was based on literature review as well as research findings (refer to **Appendix 12** and **13** for details).

Phase II After finding sufficient information about gifted and talented as well as related issues such as assessments for identification and programs for gifted and talented students, the research instruments were developed. Sequentially, few rough drafts of a structured questionnaire were developed along with a supporting with semi-structured questionnaire. A preliminary structured questionnaire and semi-structured questionnaire were tested. Four post graduate students were involved in the pre pilot study (see **Section 5.5.1.1** for details).

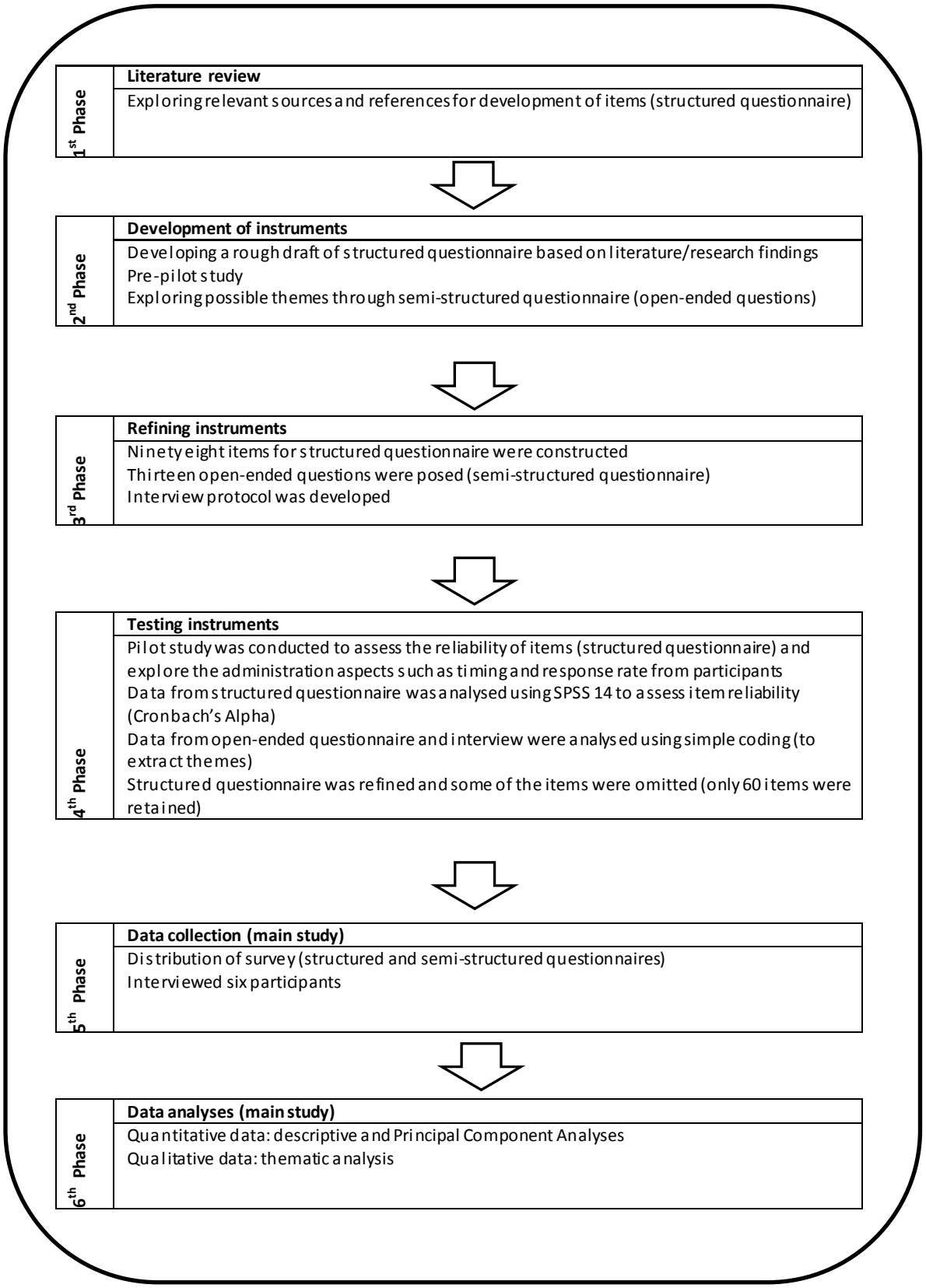
Phase III After the pre pilot study, the structured questionnaire was improvised and refined. Ninety eight questions were constructed. For the semi-structured questionnaire, there are 13 items posed. The pilot study was conducted for two months in Malaysia.

Phase IV Analysis of the quantitative data from the pilot study was conducted in November 2008. Descriptive and inferential statistics were used. Descriptive statistics were used to find the means and standard deviations. To determine the reliability of the structured questionnaire, reliability analysis was applied. The Cronbach Alpha coefficient of the questionnaire was 0.956. The structured questionnaire was refined and the best 60 items were chosen and retained to be used in the main data collection. For the qualitative data, simple thematic analysis was applied which only involved simple coding from participants' responses.

Phase V The main study was conducted from mid-March to mid-June 2009.

Phase VI Analysis of the quantitative date involved the use of statistical analysis package known as SPSS 17 for the descriptive and inferential analysis. For the qualitative analysis, thematic analysis was used. The themes were coded manually and NVivo 8 was used as a tool to assist the analysis.

Figure 5.1: Research design phases



5.4.1.1 Pre pilot study: an initial attempt

A pre pilot study was conducted to explore the possible themes for constructing questionnaire (structured and semi-structured questionnaires). Four postgraduate students of School of Education, Durham University as well as Graduate School of Education, Bristol University were given a questionnaire. They were asked to answer twelve open-ended questions and provide feedback based on the questionnaire given (see **Appendix 7** and **8**). These are their feedbacks:

1) The questionnaire was too wordy

The questions posed in the questionnaire are considered too long. One student wrote that *"it is better if you could make it in a survey form".* The pre-pilot questionnaire was open-ended questionnaire and thus, it is aimed to get information as much as possible without limiting participants' responses.

2) Some of the questions are redundant

Two respondents felt that some of the questions were redundant. Respondents claimed that question 1 and question 3 asked similar things. In this instance, the actual difference between question 1 and question 3 is question 1 asked general conceptions of gifted whereas question 3 asked the characteristics of gifted and talented individuals as understood by them. The two questions appear similar as both questions aimed to uncover if there is any discrepancy between the general and specific conceptions of gifted and talented. My initial assumption was when they attempted to answer those related questions, they might have to think harder when they came across the second question which was more specific and thus, it is assumed that perhaps they might provide more detail answers. However, this was not what the participant perceived. One of the respondents wrote: *"It seems that there is no difference between question 1 and question 3. When I read question 3, I don't have any more idea to answer it and thus, I just wrote back what I have answered".* However, such limited response might indicate lacking in understanding or appropriate information that they might have regarding giftedness and worth to be explored further in interview, for example.

3) Respondents felt that it is not their specialisation

The respondents were postgraduate students at the time of the questionnaire being conducted. They felt that they could not provide meaningful answers regardless of their educational background and training. One did not finish answering the questionnaire and wrote a note: *"For those I did not answer, I think those answers may take time to think about because it is not my specialisation (gifted studies - my comment)"*.

In addition to their feedbacks, their written responses were analysed using simple coding. From the coding, four themes were identified. The four themes are:

a) Giftedness is equated with high IQ level.

Perhaps one of the most interesting responses from participants (all four stated the same thing) is their perception about giftedness in relation to intelligence. In this respect, they perceive that individuals with high IQ scores as gifted individuals. The responses can be summed up as follows:

- *"Gifted and talented individuals had high IQ and/or EQ which can be proven through some kind of assessments like IQ tests."*
- *"Gifted individuals have high IQ"*
- *"They are smart. Have high IQ"*
- *"They are highly intelligent"*

Looking at their responses, it could be assumed that high IQ is commonly used as one of the main indicators of giftedness. In addition, as stated by one participant, psychological assessment like IQ tests are assumed to be one of the mechanisms to assess and provide evidence of one's intelligence. This assumption is in line with a research proposition by Kaufman and Harrison (1986) who contend that intelligence tests are useful to identify giftedness based on its psychometric characteristics and valuable information that it could provide.

b) Giftedness refers to having extraordinary ability or talent.

Other than intelligence, giftedness is also equated with extraordinary ability or talent which one demonstrates. In their response, three participants stated that extraordinariness is one of the characteristics of giftedness. Their responses are as follows:

- *"Gifted and talented individuals are outstanding people. They perform or demonstrate extraordinary ability that not many can"*

- *"An extraordinary ability or talent is a main characteristic of giftedness. Sometime we could find that a gifted individual has one specific gift like in certain subject like mathematics but other might have more than one gift or talent"*

- *They have natural gifts. Something extraordinary which not many have'*

As can be seen from the above response, extraordinary ability is perceived to exist in one or more than one domain of ability. This brings us to the next theme which relates closely to this second theme.

c) Extraordinary performance could be manifested in one or more than one domain of ability.

Looking at the previous response from a participant, extraordinary ability is perceived to exist in more than one domain of ability. This assumption is somewhat similar with proposition by Gardner (1983) about multiple intelligences which contends that ability is multifaceted. As another participant puts it:

- *"One can be gifted in one thing or more than one even though it is quite rare to find someone who is multitalented or have more than one special gift".*

d) Gifted and talented individuals need minimal assistance to complete a task.

It might be commonly assumed that gifted and talented individuals are able to complete a task with minimal assistance from others in which such assumption is based on one's experience. Only two participants wrote their responses in relation to this theme. Their responses are:

- *"Gifted students do not need much help to complete a task or to understand something. They can figure things out themselves. This is based on my own experience as a teacher".*

- *"They are fast learner. They can solve any problem quicker than other. Don't need help from teacher."*

e) Gifted and talented individuals solve a problem or task faster than others

From the previous response, other than needing minimal assistance to complete a task, a participant also wrote another characteristic that she perceived that gifted and talented individuals have which is the ability to learn or complete a task in faster manner as compared to others. As one participant puts it:

- *"They are fast learners. They can solve any problem quicker than others."*

This assumption might be related to the ability to process information rapidly by gifted individuals as compared to others which is found in various studies on gifted students in various domains such as mathematics (see Jensen, 1990) and verbal (see Dark and Benbow, 1991). Other studies on the speed of information processing found there are differences between gifted and non-gifted students in this aspect (for details refer to Cohn et al., 1985; Jensen et al., 1989; Saccuzzo et al., 1994; Kail, 2000; Roivainen, 2011).

In summary, from the feedback and responses that I gathered from this pre-pilot sample (four participants), I decided to use more than one question type in collecting data for my research. Thus, for the main study, survey and interview were used as data collection methods. For the survey, a structured questionnaire and a semi-structured questionnaire (open-ended questionnaire) were used. For the interview, the questions were related to the semi-structured questionnaire that was distributed prior to the interview. This would allow me as the researcher to probe more on what they have answered in the semi-structured questionnaire. Other than that, by using multiple method of data collection especially by including interview, it is flexible enough to make necessary adjustments for unexpected circumstances as proposed by Fontana and Key (1994).

In constructing the questionnaire for the survey, I followed the principles as proposed by de Vaus (2007). According to de Vaus (2007), there are three principles in developing question: exhaustiveness, exclusiveness and balance (p. 100-101). The three principles could be summarised as following:

- Exhaustiveness refers to providing all possible responses that a respondent could select on (de Vaus, 2007). For example, a question that asks about age for the in service teachers is ranged from 20 years old (age after finishing college education) to 56 years old (age of retirement) in which there are several possible responses are available to be chosen from. Some respondents might hesitate to reveal their true age and thus, each response has five years for the age range (see **Appendix 15** for example).
- Exclusiveness means that participant only can choose one answer in a question or item statement (de Vaus, 2007). In this instance, a question also must lead a respondent to only choose one of the available responses that is most relevant to him or her. de Vaus (2007) acknowledges that exclusiveness might be a problem when participants are allowed to choose more than one answer. In this study, participants were asked to select the types of sources for information on giftedness which are most relevant to them without ranking it (refer to **Appendix 15** for example) because each response is considered as having equal importance to the participants. Also, it is to avoid participants from having difficulty to decide the order of a response on a particular continuum as suggested by de Vaus (2007).
- Balance question response refers to the equal number of alternative available for high to low response (de Vaus, 2007). For example, in the survey, the response range from strongly agree, agree, disagree, strongly disagree to not sure (where the respondent is given a choice to answer an item in which he or she has no agreement or disagreement).

5.4.1.2 Pilot study: a refining phase

This section starts with the rationale for the pilot study among in service and pre service primary school teachers to explore their conception of giftedness. As mentioned previously, in this study a mixed methods design was used and thus, data was gathered using structured questionnaire, semi structured questionnaire as well as interview. A structured questionnaire as well as a semi structured questionnaire was pilot tested in Malaysia. The duration of the pilot study was two months from 25 August 2009 to 24 October 2009. The pilot study was conducted in three schools in Johor for the in service teachers and also in the

Faculty of Education, Universiti Teknologi Malaysia, Skudai, Johor, Malaysia for the pre service teachers.

In the pilot study, there were 40 in service teachers and 114 pre service teachers who participated in the pilot study (see **Appendix 9**). In addition, an interview with one respondent was conducted too to explore the administrative aspects of interview such as time management, and rapport building. In general, the pilot study involved four stages (see **Table 5.11** for summary).

Table 5.2: Summary of development for the pilot study

Stage	Timing	Procedures
I	1 August - 18 August 2008	- Multiple-forward translation: 3 experts - Validation: Independent expert and personal validation - Obtain approval from respective lecturers and headmasters of respective schools

II	25 August – 24 October 2008	- Distribution of questionnaires
		- I was given permission to enter four classes for questionnaire distribution
		- I went to three schools to distribute questionnaire
		- **Sample size**:
		  - Structured questionnaire: n = 154
		  - Semi-structured questionnaire: n = 13

III	17 September 2008	An interview (verbally unrecorded but hand written)
IV	November 2008	Data analyses

Stage I The questionnaires and interview protocol were translated to the Malay language from English prior to the distribution of questionnaire and interview. Three experts[107] were approached in July 2008 to participate as translators in this study for multiple-forward translation process. In this study, multiple-forward translation was obtained through engaging various independent translators to translate the research instruments used in this study as proposed by Maxwell (1996). Multiple-forward translation have been used in other studies such as by Mundia and Hj Abu Zahari (2010), Mimura and Griffiths (2007) and Abdul Majid (1993). In addition, according to Maxwell (1996) the translated versions have to be reviewed through an item and item comparison. In this study, all of the translated sets were refined by an independent expert with me to finalise the questionnaires.

[107] All of the experts are well-versed in Malay and English. Two of them have obtained PhDs from the UK and US respectively.

In distributing the questionnaires to the pre service teachers, four lecturers were approached to obtain their consent to enter their classes for questionnaire distribution. In addition, to distribute questionnaires to in service teachers, headmasters[108] of three schools were approached to obtain their consent to conduct a survey at their respective schools.

Stage II Upon the approval from respective lecturers and headmasters, I distributed the questionnaire to pre service and in service teachers at their respective locations. Even though it was a drop-off survey, yet I was present at the time of distribution and waited each participant to complete answering the questionnaire. It is aimed that any query would be addressed immediately during the distribution. In addition, in the pilot study, even though I did not exactly predetermined the sample size, bearing in mind on a rule of thumb (the larger the samples are the better), I attempted to ensure that I would get adequate samples to assess internal consistency of the structured questionnaire. From the literature, it seems that there is no consensus on the sample size for pilot study (e.g. Julious, 2005; Hertzog, 2008; Johanson and Brooks, 2010; Thabane et al., 2010).

For example, in a discussion on the adequacy of sample size for a clinical trial, Julious (2005) suggested 12 per group. His justification for this is based on '*rationale about feasibility; precision about the mean and variance; and regulatory considerations*' (p. 287). In similar note, Johanson and Brooks (2009) proposed that if the purpose of the pilot study is to evaluate an instrument '*30 representative participants from the population of interest is a reasonable minimum recommendation*' (p. 6). For similar reasons, some researchers like Hertzog (2008) and Thabane et al. (2010) suggested the use of confidence intervals to determine the sample size needed. According to Hertzog (2008) even though small sample as 10 or fewer than that might be suffice '*for assessing clarity of instructions or item wording, acceptability of formatting, or ease of administration*' (p. 182), yet such small sample might be inadequate for evaluating internal consistency as suggested by Bonett (2002). Looking at the suggestions of various researchers, I selected 154 participants (n = 114 pre service, n = 40 in service teachers) for the pilot study. Even though it was relatively

[108] Since it is time consuming to get formal approval to conduct a research in school under the jurisdiction of the Ministry of Education, I approached three postgraduate students who are also headmasters in three schools in Johor to conduct the pilot study at their respective schools. For more details of the process in getting approval to conduct a research in schools in Malaysia, see **Section 5.5.1.3**.

small sample size, yet it was sufficient for assessing internal consistency as indicated in Stage IV of the pilot study.

Stage III While distributing the questionnaire, I also asked for a volunteer to be interviewed. The interview was planned to be verbally recorded yet due to the interviewee's wish, it was hand written and not verbally recorded. Since the pilot study was aimed to explore the suitability of items in interview protocols, it was deemed acceptable to hand written the responses.

Stage IV In October 2008, data from questionnaires were analysed. The quantitative data was analysed using a statistical analysis package called SPSS 15. Cronbach's Alpha coefficient was used to assess the internal consistency of research items. The Cronbach's Alpha of the pilot study was 0.956, exceeding the recommended level of significance for alpha of 0.7 as suggested by de Vaus (2007) (see **Chapter 6 – Section 6.6** for more information on reliability of survey instrument). From the findings of corrected item (total correlation), research items were analysed item by item for final refinement. Items with low value of corrected item (total correlation) were omitted in the main study (see **Appendix 12** for more information of each item). Thus, from 98 items, only 60 items were selected. Other than reliability testing, descriptive analysis[109] and factor analysis (Principal component analysis - PCA) were also used in the pilot study (see **Chapter 7 – Section 7.3** for details of factor analyses results).

For the qualitative data collection, thirteen participants responded to semi-structured questionnaire and only one participant was interviewed. Responses from semi-structured questionnaire and interview provided qualitative data which were analysed using simple coding which was similar to the pre-pilot study. The responses are summed up as follows according to two main themes. The first theme refers to the characteristics that gifted and talented individuals have as perceived by participants. The characteristics are further categorised into three aspects; biological, cognitive and affective. The second theme refers to internal and external elements that perceived to influence gifted and talented individuals in relation to their development of gifts and talents.

[109] A summary of descriptive analysis and findings of total correlation (corrected items) of each item are presented in **Appendix 12**. See **Appendix 12** for more information.

a) Perceived characteristics of gifted and talented individuals

Analysis of the pre service and in service teachers' perceptions of the characteristics of gifted and talented possess revealed varying arrays of characteristics related to biological, cognitive and affective aspects.

- **Biological aspect**

For the biological aspect, three participants state that giftedness relates to brain physiology in which two participants relate extraordinary ability that gifted and talented individuals possess with their brain size. Their responses are summed up as follow:

- *"Gifted and talented individuals have bigger brain"*

- *"Perhaps they have bigger brain than us"*

- *"They have extraordinary skills because they have different brain than us. The way they think is different because they have different brain"*

- **Cognitive aspect**

Looking at the responses from majority of the participants, it could be summarised that participants perceive giftedness in relation to cognitive characteristics that gifted and talented individuals possess. Their responses could be summed up into five themes: special gifts and talents, creativity, degrees of giftedness, high IQ and ability to solve problem rapidly. Some of their responses are summed up as follow:

- *"Gifted and talented individuals have special gifts and talents"*
- *"Gifted and talented individuals are creative"*
- *"Gifted and talented individuals have high IQ"*
- *"Gifted and talented individuals can solve problem faster than others"*

- **Affective aspect**

Unlike the cognitive characteristics as presented above gathered from majority of the participants, only one participant mentioned about affective characteristic which relates to attention span which was also assumed relates to motivation aspect. From this particular response, there are two aspects which can be derived: ability to stay focused or attention span which relates to cognitive aspect as well as motivation which could be

considered as an underlying drive that makes a gifted and talented individual could stay focused for certain duration of time in completing a task, for instance.

As one participant puts it:

- *"Gifted and talented individuals are focused. The way they stay focused for a long time is quite remarkable like the painters in Central Market (*this is one of the famous landmarks in Kuala Lumpur). Their ability to focus might have something to do with motivation as well"*

b) Perceived influential internal and external elements on the development of gifts and talents

The responses of the following themes are taken from more than half of the participants (three pre service and six in service teachers). Looking at their responses, there are two main themes derived which are assumed to influence the development of gifts and talents that gifted and talented individuals have. The themes are: mentorship and genetic predisposition.

- **Mentorship (External element)**

Three in service teachers stated gifted and talented individuals have significant others such as mentors who assist them in developing their gifts or talents. As one participant puts it:

- *"Mentors are important in gifted and talented individuals' lives. They can be the parents, teachers or coaches who assist the individuals at some point of their lives."*

Another participant highlights the role of mentor in the development of gifted and talented individuals' gifts or talents. As this particular participant puts it:

- *"Gifted and talented individuals have mentors who assist to develop their gifts or talents"*

In different note, one participant states the role of significant others in relation to talent development. This particular participant highlights that gifted and talented individuals are able to enhance their gifts or talents with limited intervention such as assistance from others.

- *"Gifted and talented individuals can flourish with limited assistance from others. Teachers or parents might not necessarily get involved in the development of talent that one might have in this sense"*

- **Genetic predisposition (Internal element)**

Seven participants wrote that gifted and talented individuals are born with special abilities. Their responses are summed up as follow:

- *"Gifted and talented individuals are genetically born with gifts and talents"*

- *"They are blessed with unusual abilities that not many might have. It is rare to find sometimes. They are born with it"*

- *"Gifted and talented individuals have extraordinary skills. It is either you have it or you don't. Like height for example, even though it might be influenced by environmental factors like the types of food that you eat, yet to certain extent it is influenced by one's genetic"*

- *"They are born to be genius. Like Mozart, his family was known to be musical. I read somewhere that his father was a talented musician as well. It is something which runs in the family"*

- *"They are born with special talents. That's make them special. They have the special gifts that normal people do not have"*

- *"They do not have to work hard to study, for example. What they have is something they have in their genes".*

- *"Everybody is born with gifts but different in intensity or degree/level, opportunity to enhance it and development pace"*

From the above responses, comparison between the pre-pilot study and the pilot study data through a close examination of participants' responses might reveal some similarities of responses. As examples, in both studies it was found that participants hold similar perceptions on these four aspects:

- High IQ
- Extraordinary ability or talent
- Minimal assistance is needed for completing a task or solving a problem
- Speed of information processing (which lead to fast completion of a task or solving a problem)

Other than investigating participants responses through survey and interview, the pilot study also aimed to explore the feedback that participants gave for improving the overall data collection processes. In this pilot study, unlike the pre-pilot study, the feedbacks that were received were minimal which mainly related to the overall organisation of the data collection. For example, some participants found it hard to read the items in structured questionnaire since I used font 9. I changed the font to 10 later on. Other than the feedback, from the interview session (with one participant), I took note of possible challenges that I might face in latter interview sessions. Some of the challenges are:

- **Participants might decline to be voice recorded** (as in pilot study). In the pilot study, even though the participant was informed that she would be voiced recorded, yet I did not explain or discuss about the advantages and disadvantages of using voice recorded tool.
- **Participants may need to be probed to get more detailed responses**. In this instance, other than rephrasing the sentences (as stated in the interview protocol as presented in **Appendix 16**), I also probed the participants to explain more by asking them to provide examples or illustrations. I did the same approach in the main study (see the following discussion on **Section 5.5.2.2** for details).
- **Overall management**. In the pilot study, since I had to write down the participant's response, I found it very hard to focus my attention on the important points of the interview. In this instance, I had to pay attention to the participant's responses, write

down her responses and at the same time, 'digesting' the information for further probing or moving on to the next question. In addition, the interview was longer than I expected. Other than that, I also asked again some of the responses for double checking and confirmation. All of these tasks are time consuming. Therefore, in the main study, I briefed the participants about the advantages and disadvantages of using digital voice recorder prior to the interview. I emphasised the importance of voice recording in this study, one of which is to maximise the quality of data from the recorded interview.

5.4.1.3 Main study: data collection phases

For the main study, I had to get approval from various parties to conduct the study. These are the phases of the data collection in this study (see **Table 5.12** for summary).

First phase: An approval has to be obtained from the Ministry of Education, Malaysia and Ministry of Higher Education, Malaysia (see **Appendix 18** and **19**). An application was sent to the respective ministries and approval was obtained in mid-March 2009.

Second phase: Before conducting the data collection, approval from research ethics committee from School of Education, Durham University was obtained in early March 2010.

Third phase: Upon the approval from the respective ministries, covering letters were sent to various institutions randomly. Due to time constraint, only institutes which replied and gave their approval before April were chosen to be involved in the study. For schools, approval letter was obtained from State of Johor Education Department which under the jurisdiction of the Ministry of Education (see **Appendix 20**).

Fourth phase: After getting the approval from respective institutions and departments, questionnaires were distributed to participants (see **Appendix 14** and **15** for examples of the structured questionnaire[110] and **Appendix 16** for example of the open-ended questionnaire).

[110] There are three sections of the questionnaire: Section 1, 2, and 3. Section 1 contains demographic questions and thus it is different for pre service and in service teachers. For section 2, the research items

Interview sessions were conducted after survey distribution upon prior arrangement[111]. I prepared an interview protocol as a guideline of my interview questions (see **Appendix 17**).

Table 5.3: Summary of phases in the main study

Phase	Timing	Processes
First	11 Jan - 19 March 2009	- Request approval from the Ministry of Education, Malaysia to conduct the study in institutes of higher education and schools in January 2010 - Approval was granted in mid-March 2009
Second	6 March 2009	- Approval from ethics committee, School of Education, Durham University
Third	19 March – 3 April 2009	- Covering letters were sent to request permission to conduct the study in respective institutions and schools - Timeline was set for final selection (for institutes of teacher education and primary schools) -i.e. two weeks-
Fourth	3 April – 26 June 2009	- For the in service teachers, I went to schools that I have randomly selected to distribute questionnaires - For the pre service teachers, I distributed to them at the end of class

5.5 Variables identification and hypothesis statements

Considering this study is as the first ever exploration of the perceived conception of giftedness and talent among pre service and in service primary school teachers in Malaysia, a deliberate effort was made to examine and include relevant variables in the study. The variables are measured and investigated which enable us to understand the perceived conceptions of pre service and in service primary school teachers towards giftedness, taking into consideration their educational background and other aspects such as available information about gifted and talented.

This might provide insights into how the pre service and in service teachers perceive giftedness in terms of: characteristics of gifted individuals, characteristics of talented

are the same for both groups. Thus, in **Appendix 14**, I present Section 1 of the pre service set of questionnaire. In **Appendix 15**, I present Section 1of the in service set of questionnaire and follow with Section 2.

[111] In this study, interview was conducted after the completion of survey in which at the end of survey questionnaire –i.e. Section 3-, participants who were willing to participate in an interview were asked to leave their particulars (name, contact number and email address) in that section for interview arrangement.

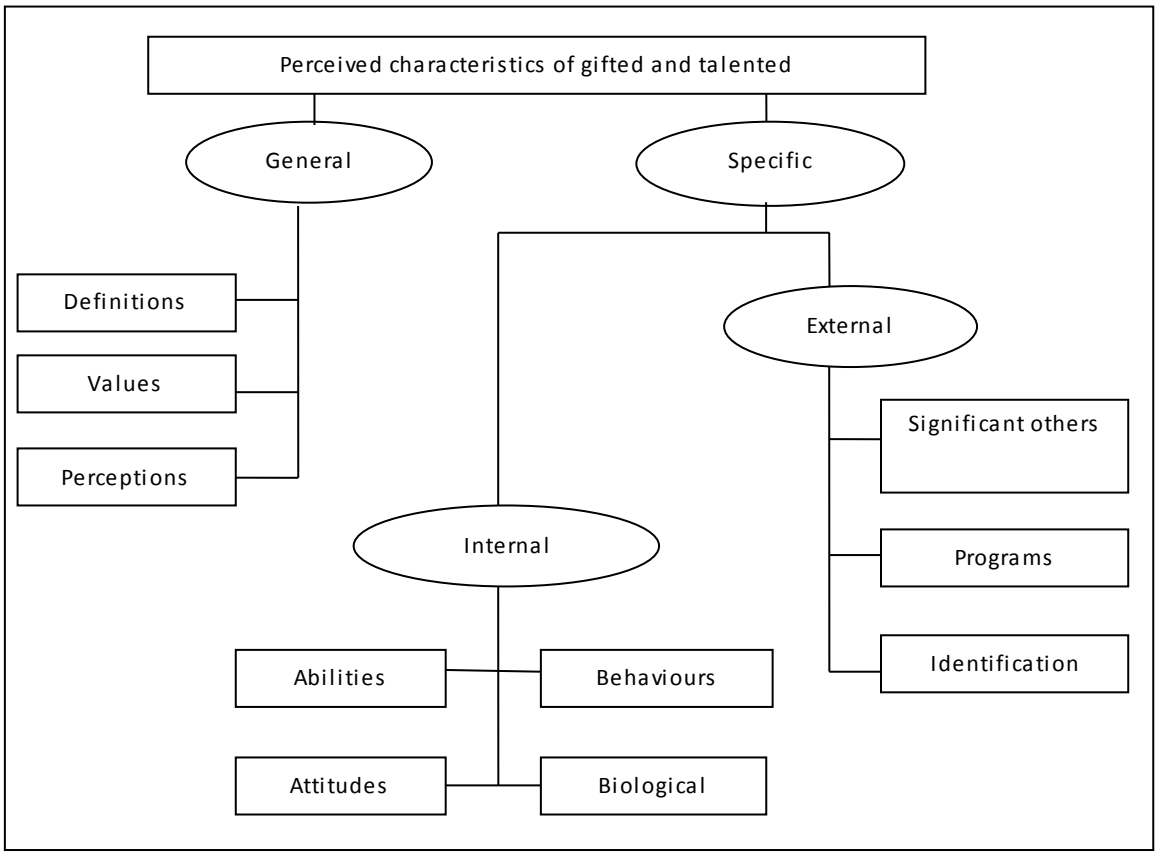
individuals, related issues such as sources of information about gifted and talented, adequacy of teaching training that they undergo (for pre service) and have underwent (for in service), their views on labelling, identification aspects such as assessments used to identify gifted and talented students that they might know and use, aspects that might intrigue them about gifted and talented individuals, aspects for future development and also their confidence as future teachers (for the pre service) and teachers who are currently teaching at various schools to deal with students who are identified as gifted as well as talented. Accordingly, the study also involves identification of some hypotheses to be tested.

5.4.1 Perceived characteristics of gifted and talented

To explore the perceived conception of gifted and talented among pre service and in service teachers quantitatively, 98 items were constructed at the beginning of this study (see **Chapter 4** for details) to answer **Research Question no. 1: What is the perceived conception of giftedness and talent among pre service and in service teachers in Malaysia?** The 98 items were pilot tested and then only 60 were selected and retained for the main study. The selection of the items retained in this study is based on; the standard deviations, means, and corrected item (total correlation) (see **Appendix 12** for details).

Each item was adapted and constructed based on theories and research findings as discussed in previous chapters (**Chapter 2, 3** and **4**). In this study, the items contain various aspects of conception of giftedness and talent are categorised into two broad headings: general and specific. The general conception comprises of general definitions of gifted and talented, socially valued characteristics and general perceptions of gifted and talented. The specific conception is divided into two sub-categories: internally related characteristics and externally related characteristics. The internally related characteristics are defined as specific characteristics that related to abilities, attitudes, behaviours as well as biological aspects of gifted and talented individuals. The externally related characteristics are defined as specific characteristics that related to identification aspects of gifted and talented individuals, programs for gifted and talented, and significant others such as parents and teachers who are assumed can influence gifted and talented individuals (for further discussion on the research instruments, refer to **Section 5.5.2**). **Figure 5.2** illustrates this categorisation of items in detail

Figure 5.2: Perceived characteristics of gifted and talented



The conception of giftedness and talent as held by pre service and in service primary school teachers might be similar or different in many ways. It is expected that there might be differences on the conceptions in general. **Research Question no. 2: Is there any difference in the perceived conceptions of giftedness and talent among pre service and in service teachers in Malaysia?** was posed for this matter.

Quantitative and qualitative analyses were used to answer this research question. For a start, to explore the differences between the different groups, the pre service and in service, three hypotheses were proposed for three different aspects of both groups (quantitative analysis). The following hypotheses were posed to explore the differences of teachers' perceived conception of giftedness and talent based on three specific aspects which categorised as group type, gender and subject taken.

Hypothesis 1: To explore differences based on the group type

$H_{o1:}$ There is no difference between pre service and in service teachers in terms of their conception of giftedness and talent

Hypothesis 2: To explore differences based on gender

$H_{o2:}$ There is no difference between male and female teachers (i.e. pre service and in service teachers) in terms of their conception of giftedness and talent

Hypothesis 3: To explore differences based on subject taken

$H_{o3:}$ There is no difference between participants (i.e. pre service and in service teachers) who have taken or not taken subjects related to gifted and talented in terms of their conception of giftedness and talent

In summary, to test the three hypotheses, the study attempts to elicit the responses of pre service and in service teachers about the perceived conception of giftedness and talent quantitatively (see **Chapter 7**). Descriptions of the difference or similarity of their perceived conceptions would also be explored qualitatively using semi structured questionnaire and interview later on (see **Chapter 8**).

Table 5.2 shows the questions posed in the semi structured questionnaire and interview to explore participants' view of giftedness and talent in general. The items also aimed to investigate the characteristics of giftedness as perceived by participants. Even though some of the questions posed might seem redundant, yet this is important to ascertain if there is any inconsistency of responses that might indicate lack of information or understanding or it might simply means that participants are uncertain about the characteristics of giftedness, for instance.

Table 5.4: Sample questions to explore perceived characteristics of gifted and talented in qualitative method –i.e. semi structured questionnaire and interview-

Questions	***a) General conceptions of giftedness, gifted and talented***
	1) What do you understand about giftedness? ***2) What are your conceptions of gifted individuals?*** ***3) What are your conceptions of talented individuals?***
	Instrument : Semi-structured questionnaire (open-ended question)
	b) Specific conceptions of gifted and talented
	1) In your opinion, what are the characteristics that gifted individuals have? ***2) In your opinion, what are the characteristics that talented individuals have?***
	Instrument : Semi-structured questionnaire (open-ended question)
	1) Based on your answers of the characteristics of gifted individuals, could you explain further your given answers? ***2) Based on your answers of the characteristics of talented individuals, could you explain further your given answers?***
	Instrument : Interview
	c) Difference between gifted and talented
	1) Do you think that gifted individuals also can be regarded as talented as well and vice versa (talented individuals can be regarded as gifted too)? ***Please tick (√) your response:*** ☐ ***Yes*** ☐ ***No*** ☐ ***Not sure*** ***Please explain more your answer*** _____
	Instrument : Semi-structured questionnaire (open-ended question)

5.4.2 Related issues

The investigation about the perceived conceptions of giftedness and talent in this study also involves issues which relate to how pre service and in service teachers understand the conception in general. This relates to the available and identifiable sources of information about gifted and talented in Malaysia, the adequacy of teaching training that they received as perceived by them, any intriguing aspects of gifted and talented that they might have, the views of labelling students as gifted and talented, and also the elements that they perceived as important in developing programs for the students. In addition, teachers' confidence in identifying gifted and talented students is investigated too.

5.4.2.1 Sources of information

For the sources of information, a question was posed in Section 1 in structured questionnaire in which participants are given a choice to tick as many sources of information that are relevant to them. **Table 5.3** presents a summary of the sample item posed in the questionnaire.

Table 5.5: Sample item to explore the sources of information about gifted and talented

Question: ***Where do you get the information about gifted and talented students/ individuals? Please tick where appropriate (you can tick as much as you like and there is no limit to your answer)***
☐ Media such as newspapers, TV and radio program, websites ☐ Books ☐ Academic Journals (e.g. Journal of Educational Psychology) ☐ Friends who have gifted or talented children ☐ Newsletters of organisations such as National Gifted Children Association Malaysia (NGCAM) ☐ Formal training such as University Courses ☐ Workshops or seminars ☐ Others: (Please specify) _____

To investigate the adequacy of information that they acquired from various sources as they have stated in the structured questionnaire, participants would be asked later on in interview. Interviewees were asked the reasons and efforts that they have taken and would take in the future to search more information about gifted and talented. The questions posed in the questionnaire and interviews are stated below in **Table 5.4**.

Table 5.6: Sample items to explore the adequacy of information from various sources and efforts to search information about gifted and talented

Questions	***1) Where do you get information about gifted and talented students/ individuals?***
	Instrument : Semi-structured questionnaire (open-ended question)
	2) As stated, you get information about gifted and talented individuals from various sources. Do you think that you get enough information about gifted and talented individuals from your reading?
	Instrument : Interview
	3) What are other possible means to get information about gifted and talented individuals that you can think of which are not listed in the questionnaire?
	Instrument : Interview

In summary, the research instruments as described in **Table 5.3** and **5.4** are used to answer the **Research Question no. 3: How do Malaysian pre service and in service teachers arrive at the conception of giftedness and talent?** In this instance, two more sub questions are posed to assist me in exploring the answers to the main **Research Question no. 3** which are:

a) **What are the sources of information about giftedness according to pre service and in service teachers?**
b) **How adequate the information in helping them to understand the concept and issues related to giftedness?**

The investigation of the **Research Question no. 3** was mainly conducted qualitatively and thus, thematic analysis was used to analyse the qualitative data derived from participants' responses in semi structured questionnaire and interview (see **Chapter 6 – Section 6.2.2.4** for details).

5.4.2.2 Teachers' confidence in identifying gifted and talented students

To explore the confidence of pre service and in service teachers in identifying students who are gifted and talented, they were asked a question in semi-structured questionnaire and two further questions in interview. Also, it is aimed to discover possible explanation for the **Research Question 4: Are pre service and in service teachers confident in identifying students as gifted and talented?** (see **Table 5.5** for a summary of the items posed in the research instruments).

In this instance, the questions posed in the research instruments in the semi structured questionnaire and interview are not meant to measure the level of confidence quantitatively; rather the questions serve to explore their confidence levels as perceived by them qualitatively. Even though they were asked to rank their confidence level, yet it serves as a basic indicator on how confident they are in identifying the students as gifted and talented. Their answers could then be probed in more detail when they were asked to provide reasons for the rank they gave about their confidence level. The probe might provide a clue about their confidence as one of the indications of preparedness in dealing with gifted and talented students.

Table 5.7: Sample items to explore the confidence of pre service and in service teachers in identifying gifted and talented students

Questions	***1) Are you confident to identify students as gifted and talented?*** ***Please tick (√) your response:*** ☐ ***Yes*** ☐ ***No*** ☐ ***Not sure*** ***Please state your reason:*** _____
	Instrument : Semi-structured questionnaire (open-ended question)
	1) Based on your answer in question 11, you stated (based on their answers either yes (confident) or no (not confident) or not sure. If you can rate your confidence, how do you rate your confidence level? (With 5 - Really confident to 1 – Not really confident) ***2) Can you explain further your reasons in answering question 11 (They are asked to state the reasons of feeling confident or not confident or not sure and also the rank which they gave to their confidence level)***
	Instrument : Interview

5.4.2.3 Awareness on the identifying mechanism

The **Research Question 5: How aware are pre service and in service teachers about identification procedure and/or assessments [112] in identifying gifted and talented students?** is posed to investigate their awareness as well as understanding on the procedure and/or assessments involve in identifying gifted and talented which might be commonly used in some countries in the world (see **Chapter 3 – Table 3.1** for summary of some of the assessments used in identifying gifted and talented). In general, in terms of identifying gifted and talented students, it seems that there is no consensus on which is the best assessment for identifying them (Pfeiffer, 2003). This proposition is in line with the proposition that there are no definite and agreed definitions of giftedness (Robinson and Clinkenbeard, 1998). In contrast, according to Tannenbaum (1983) giftedness is mostly associated with intelligence in which gifted individuals are identified based on their superior intelligence. Based on this proposition, assessments such as IQ tests might be widely used and acceptable

[112] At the time of data collection from March 2009 to June 2009, there is no program available for gifted and talented students that are organised by the Ministry of Education Malaysia or by any government ruled organisations such as local universities. The first program that was organised in December 2009 by UKM called PERMATAPintar (a collaboration program with John Hopkins University, USA) (UKM, 2009). Therefore, no specific question is asked about the program available for educating and polishing the gifts or talents that gifted and talented students might have. However, participants were asked if they are aware of any development of special programs for gifted and talented students in Malaysia in general.

for valid assessment for identifying giftedness. However, how pre service and in service teachers are aware of other assessments in relation to identifying students as gifted and talented in Malaysia is not well-researched (see **Chapter 3** for details). Thus, in this study, pre service and in service teachers' awareness and knowledge about the assessments are explored.

There are two questions posed in the research instruments to explore their familiarity about available assessments in identifying students who are gifted and talented. If they answer 'yes' in the semi structured questionnaire, they would be asked another questions during interview which aim to explore further their familiarity as well as understanding about assessments that can be used in identifying gifted and talented students. The questions are summarised in **Table 5.6**.

Table 5.8: Sample items to explore pre service and in service teachers about their awareness and/or understanding of identifying gifted and talented students

Questions	***1) Are you familiar with the identification process for identifying gifted and talented students?*** ***Please tick (√) your response:*** ☐ ***Yes*** ☐ ***No*** ***If yes, what is/are the criteria that should be included in the assessment for the identification process?*** _____
	Instrument : Semi-structured questionnaire (open-ended question)
	1) Based on your answer in question 13 (open-ended question), you stated that you are familiar with the identification process of gifted and talented students. If they answer yes (indicate that they are familiar with the identification process for identifying gifted and talented students) ***a. Based on your answer in question 13, what is the identification process that you are familiar with in identifying gifted and talented students?*** ***b. In your perception of the best identification type for the identification process, you state that (based on their answers e.g. nonverbal assessment is the best etc.). Can you explain further you answer? Why do you think that (based on their answers e.g. nonverbal assessment is the best etc.) is the best assessment?***
	Instrument : Interview

5.4.2.4 Teachers' perceptions of these four issues:

- **Aspects participants perceive as intriguing in relation to gifted and talented individuals**
- **Adequacy of teacher training and future training that they might want to have**

- **Labelling of gifted and talented students and its importance**
- **Important aspects in developing gifted education in Malaysia**

5.4.2.4.1 Aspects participants perceive as intriguing in relation to gifted and talented individuals

Other related issues that been investigated in this study are intriguing issues that pre service or in service teachers might perceive about gifted and talented individuals. The participants are asked to list questions that they have thought about gifted and talented individuals. **Table 5.7** presents a summary of the items posed to answer the **Research Question no. 6: How do pre service and in service perceive issues related to giftedness i.e. a) intriguing aspects related to gifted and talented individuals?** This research question is posed in this study to probe further any query that they might have in relation to the conception of giftedness and talent that they have. This exploration might provide more detail aspects that they unsure of which might include the general conception of giftedness. Thus, participants' responses might also highlight some limitations of their understanding on the overall conception of giftedness and talent in general.

Table 5.9: Sample items to explore intriguing issues posed by pre service and in service teachers about gifted and talented individuals

Questions	***1) Please list some of the issues that intrigue you about gifted individuals as well as talented individuals.*** ***2) Please list up to five questions you have about giftedness.***
	Instrument : Semi-structured questionnaire (open-ended question)
	1) ***Can you explain further the issues that intrigue you about gifted and talented individuals?*** 2) ***You have listed several questions that you have about giftedness, so how do you plan to find the answers to those questions?***
	Instrument : Interview

5.4.2.4.2 Adequacy of teacher training and future training that they might want to have

For the adequacy of teacher training that pre service and in service teachers have experienced, the investigation focused on the subjects offered in universities that they

received their teaching training. A question is also posed to explore the types of further training that they would like to receive to enrich their teaching training (for pre service teachers) as well as teaching experiences (for in service teachers).

The questions posed in the semi structured as well as interview as presented in **Table 5.8** are mainly aimed to answer the one of the sub questions in **Research Question no. 6: How do pre service and in service perceive issues related to giftedness i.e. b) adequacy of teacher training and future training that they might want to have?** The question was posed to uncover the perceptions of pre service and in service about the teacher training they have experienced in preparing them to teach students who are identified as gifted and talented.

As previously discussed in **Chapter 4 – Section 4.3**, studies have shown that there are differences in terms of teachers' understanding of giftedness in general. In specific, a review of teachers' conceptions of giftedness and talent in relation to nominating students for gifted and talented programs (as presented in **Chapter 4 – Section 4.4**) was attempted to highlight the importance of teacher training and/or experience (see **Chapter 4** for details discussion on teachers' conception of giftedness and talent). Even though, in this study it was not directly aimed at exploring the nomination process[113] by teachers, yet I intended to investigate teachers' overall understanding and perception of the teacher training that they experienced. In this instance, any lack of teacher training in relation to preparing teachers to deal with gifted and talented students from teachers' perspective is explored.

[113] Since gifted education is relatively new in Malaysia, it is commonly known that teachers do not trained o identify gifted and talented students in schools. Teacher training courses provide teachers with exposure to assess students based on standardised curriculum.

Table 5.10: Sample items to explore the adequacy of teaching training

Questions on adequacy	***How adequately do you think your teaching training (such as subjects offered by the university you are studying) in preparing you to identify gifted and talented students in the future?***
	Instrument : Semi-structured questionnaire (open-ended question)
	Based on your answer about the adequacy of teaching training that you have gained (or undergoing – for pre service), you said that it is (based on their answers such as adequate or not adequate etc.). ***What are the subjects other than the Introduction to Educational Psychology that you plan to take/ are taking/ have taken that help you to understand better about giftedness?(for pre service teachers)*** ***you have taken that help you to understand better about giftedness?(for in service teachers)***
	Instrument : Interview
Questions on future training	***Please indicate in which aspects of educational training you would like to receive in enhancing your understanding about giftedness.***
	Instrument : Semi-structured questionnaire (open-ended question)
	Based on your answer in question 12 (open-ended question), you would like to receive further training in some of the aspects (based on their answers e.g. teaching or administration aspects etc.). ***In your opinion, why do you want to receive such training?*** ***In what way, do you think that such training will benefit you as a teacher?***
	Instrument : Interview

5.4.2.4.3 Labelling gifted and talented students and its importance

This study also investigates the perceptions of pre service and in service teachers on labelling students as gifted or talented. Their agreement or disagreement or indifference is explored using open-ended question and interview. The responses might provide insights on how they perceive the value of labelling such students as gifted or talented in schools. Being someone who will be a teacher later on, it is important to understand how the pre service teachers perceive labelling because labelling should be used with caution as this might influence the teaching process and/or atmosphere, such as the way they communicate with the students in their class (a review of this issue was covered in **Chapter 4 – Section 4.6**).

For the in service teachers, it is important to explore their perceptions about labelling students as gifted and talented as this will influence their perceptions of those students who have been identified as gifted or talented in their teaching practice. Their initial perceptions and labelling could lead to a self-fulfilling prophecy. In fact, however, more than 30 years of studies on self-fulfilling prophecy suggest that teachers' expectation on students'

performance influence the actual performance of students. Some of the studies are such as by Brophy and Good (1970), Alpert (1974) and de Boer et al. (2010). This is in line with as what has been proposed by Rosenthal (1975) on the Pygmalion effect. The related questions posed on teachers' views of labelling are presented in the instruments of this study which are as in **Table 5.9**. The questions are posed to answer the **Research Question no. 6: How do pre service and in service perceive issues related to giftedness c) labelling gifted and talented students and its importance?**

Table 5.11: Sample items to explore pre service and in service teachers' views on labelling students as gifted and talented

Questions	**1)** ***Do you think that is it necessary to label students as gifted and talented? Please tick (√) your response:*** ☐ ***Yes*** ☐ **No** ☐ ***Not sure*** ***Please state your reason:*** _____
	Instrument : Semi-structured questionnaire (open-ended question)
	1) Can you elaborate further your beliefs/reasons that the labelling will benefit/ not benefit students identified as gifted and talented? (depends on the answer provided in the semi-structured questionnaire)
	Instrument : Interview

5.4.2.4.4 Important aspects in developing gifted education in Malaysia

Gifted education is relatively new in Malaysia and thus, there are significant opportunities for development in gifted education. Therefore this study also explores elements that teachers perceive as important in developing gifted education in Malaysia. To date, there is no study to explore on this issue neither quantitatively nor qualitatively. Thus, in this study it is attempted to investigate teachers' view on some of the important aspects of developing gifted education in Malaysia.

The **Table 5.10** presents the summary of questions from the instruments of this study. The **Research Question no. 6** posed to explore the elements that perceived as important in developing gifted education in Malaysia is **How do pre service and in service perceive issues related to giftedness i.e. d) important aspects in developing gifted education in Malaysia?** (see **Table 5.1**). Even though some said that gifted education has been developed in the

1880s as claim by Noriah et al. (2009), yet such supposition is arguable because what seems to be available during the 1980s was a special program for high achieving students known as BAKA project (*Projek BAKA*) (see **Chapter 1** – **Section 1.1** and **Chapter – Section 3 – Section 3.3** for details on the historical and current state of gifted programs in Malaysia). In addition, there are no studies investigating the awareness of pre service and in service teachers about the existence of gifted education in Malaysia, such as special programs for gifted and talented students.

In this study, with the assumption that many pre service and in service teachers are not aware of the existence of previous program such as Projek BAKA (refer to **Chapter 1** and **Appendix 1** – an email from Prof Dr Ungku Aziz), I aim to explore only one aspect of gifted education as perceived by the pre service and in service teachers such as assessments use in identifying gifted and talented students (**Research Question 5**).

Table 5.12: Sample items to explore important elements in developing gifted education in Malaysia

Questions	***1) What do you consider to be important criteria in establishing a new method or program in identifying gifted and talented students?***
	Instrument : Semi-structured questionnaire (open-ended question)
	1) Based on your answer in question 15 i.e. the last question, (based on their answers e.g. appropriate allocated budget from the government etc.) is/are considered to be most important in establishing a new method or program in identifying and assigning gifted and talented students. a. ***In your opinion, why do you think that (based on their answers e.g. appropriate allocated budget from the government etc.) will help in establishing new method or program in identifying and assigning gifted and talented students?***
	Instrument : Interview

5.5 Research design: instruments

Since this study adopts a mixed methods design, there are two main methods in collecting data: survey and interviewing. First, for the survey, two sets of questionnaires are used: structured and semi-structured questionnaires (open-ended questions). Second, for the interview, an interview protocol was prepared prior the interviewing.

At the preliminary stage of the questionnaire development, I did a thorough literature review in finding appropriate theories and research evidence. The literature search is meant to find main points that could be developed later on as structured questionnaire items. It is also meant to explore issues that related to gifted and talented such as labelling, educational programs, and identification process involved as applied and practiced in some countries that serve as a guideline for the development of the qualitative instruments: the semi-structured questionnaire and interview protocol.

5.5.1 Questionnaire

To ensure that any bias is minimised from emerging in this study, a structured questionnaire consisting of close-ended types of questions was carefully constructed in this study. The use of a structured questionnaire allow me as a researcher to apply appropriate statistical tests in evaluating the empirical findings of this study as well as to prompt quick responses from the groups under study. Thus, uniformity and consistency could be maintained throughout the data collection process. Other than that, this study also involved a semi structured questionnaire in which open-ended questions were posed to allow participants to provide responses based on their own words. In this regards, participants were given freedom to express themselves through written words. Participants' responses in the semi-structured questionnaire were explored further in interview (more discussion in **Section 5.6.2**). Generally, there are several advantages and disadvantages of questionnaires that have to be taken into consideration. The advantages and disadvantages are presented in **Table 5.13.**

Table 5.13: Advantages and disadvantages of questionnaire

Advantages	Disadvantages
• Good for measuring attitudes and eliciting other content from research participants • Inexpensive or economical • Can administer to probability samples or groups • Perceived anonymity by respondents possibly high • Moderately high measurement validity for well-constructed and well-testes questionnaires • Low dross rate for closed-ended questionnaire • Ease of data analysis for closed-ended items • Increase anonymity	• Need validation • Must be kept short • Might have missing data • Possible reactive effects • Non response to selective items • Response rate possibly low for mail questionnaire • Open-ended items possibly resulting in vague answers • Open-ended items possibly reflecting differences in verbal ability, obscuring the issues of interest • Data analysis sometime time-consuming for open-ended items • Too low percentage of returns

(Sources: Cohen et al., 2000, p. 129; Johnson and Turner, 2003, p. 306)

5.5.1.1 Structured questionnaire

The items were chosen, developed and structured based on theories (psychology and education theories) and research findings from psychological literature. In general, the models or theories of giftedness could be categorised into educational (e.g. Renzulli, 1978; Gagné, 2004); and psychological based (e.g.Gardner, 1993; Sternberg and Zhang, 1995) that serve as main references in developing several items in the questionnaire (further details of the models or theories of giftedness are discussed in **Chapter 2**). Some items are based on research findings especially on specific aspects of the conceptions of gifted and talented such as the role of significant others such as mentors in talent development of gifted and talented (see **Appendix 13** for details).

For example, item 6 (*Giftedness is hereditary*) is developed from proposition by Galton (1869). Even though, this proposition is not refuted at present time, yet researchers like Vernon (1992), Wainwright (2005) and van Leeuwen et al. (2008) have attempted to find the links between genetics and individual performance and achievement. One of the common findings in those studies is genetics to certain extent influence individual performance and achievement yet the links could be concluded as inconclusive because there are various factors such as mentors that might influence the lives of gifted and talented individuals as found in a study by Pleiss and Feldhusen (1995)[114]. Present theorists like Gagné (2010) and Heller (2010) do not directly state 'genetics' aspect in their models of giftedness, yet the terms used in their models do indicate their agreement on the influence of inheritance on giftedness. Gagné (2010) used the term 'genotypic foundations' to referred to genetics component in this talent development model (see **Chapter 2** – **Section 2.5** for details). In this vein, item 6 is included in the research tool (structured questionnaire) as it reflects the proposition which could be referred to proposition in psychological literature.

In summary, the validity and reliability of instrument in a study are determined based in part on how the instrument is developed. Therefore, in this study in developing the questionnaire, there are two main aspects that are taken into consideration: measurement

[114] In their review of various studies on mentorship, Pleiss and Feldhusen (1995) found that interactive relationship that gifted individuals have with their mentors, role models or heroes to certain extent influence gifted individuals in terms of their aspirations, motivations as well as behavioural traits that they imitate from their mentors, role models or heroes.

and scaling. Measurement and scaling are important in ensuring the validity and reliability of the questionnaire used in a study. Reliability refers to the consistency of responses from participants from repeated occasions (de Vaus, 2007). To increase reliability, de Vaus (2007) suggested several ways: to use multiple-item indicators, choose careful question wording, and work out methods of coding (p. 53). Validity is obtained when an instrument measures what it is intended to measure.

5.5.1.2 Semi structured questionnaire

In this study, the semi structured questionnaire comprises of 13 open-ended questions. The participants are given the opportunity to respond according to their own words and preferences. According to Johnson and Turner (2003) the order of responses of open-ended question might be depended on what item participants prefer to answer first although normally many might opt to start with the first item and respond according to the order of the items. In this case, participants are given a freedom to respond based on their preferences and in a less structured manner. This might provide insights of new ideas or awareness to the study that are worthwhile.

However, it might be time consuming for the participants to answer because they might have to write down their responses instead of to choose predetermined responses in a scale such as Likert scale, for instance. Also, Johnson and Turner (2003) state that the participants could choose not to answer any of the questions in the open ended questionnaire, but they are informed that they would be asked about the responses that they have written as well as any part that they leave unanswered. If they leave any question unanswered, it could mean that they might not know the answer, or refuse to answer the questions and this would be probed in the interview further on. In this study, I asked participants questions in the interview following the open-ended questionnaire to examine in more detail each response that they wrote or left unanswered.

5.5.2 Interview

Interviewing was chosen in this study. Interview elicits rich responses from participants that reflect ‘a degree of reflectiveness, personal candour, and genuine talk’ (Converse and

Schuman, 1974, p. 1). According to Johnson and Turner (2003) using interview in a study allows me as a researcher to "probe the interviewee for clarity or for more detailed information when needed" (p. 305). Even though interviews allow researchers to gain more in-depth information, yet according to Paget (1999) interviews relate to content creation. In this instance, Paget argues that many researchers tend to standardise an interview's content by deciding on the questions being asked (or not asked) and their sequence, as well as the types of questions (either open-ended or closed questions, probing or discontinuous questions).

However, it should be noted that the questions of 'what' and 'how' in an interview also relate to the purpose of the interview itself (Holstein and Gubrium, 1999). They further exert that since interviews could lead to potential bias and error, researchers should ask questions properly in order to get desired response from participants. One of the approaches to ensure that researchers only ask appropriate questions relating to a study is by preparing a set of interview questions beforehand and the questions would be asked according to certain order and manner as suggested by Sommer and Sommer (1997). In this study, a set of interview questions was prepared prior the interview (see **Appendix 17** for details of the interview protocol).

In short, even though interview could be seen as a potentially manipulative[115] way of getting desired information from participants, my stance is some direction is needed as long as it is conducted following ethical procedures. According to Rose (1945), an interviewer must be objective and honest while asking questions and taking down interview responses. In addition, he proposed that other than truthfulness and rapport with the interviewee(s), an interviewer might also need to 'experiment verbally with the subject' (p. 143). However, he asserted that verbal experimentation[116] during interviews should be used sparingly. Rose (1945) contended that there are three instances in which a researcher as an interviewer might need to use experimentation in interviews:

[115] The word 'manipulative' might be too strong to be used. However, while conducting interviews in this study, I kept myself aware on the purposes of conducting interviews and thus, I restrained myself from asking questions which were not stated or related in the interview protocol. However, I paraphrased the sentences in the interview protocol to suit with the flow of interview.

[116] In verbal experimentation as suggested by Rose (1945), an interviewer might probe participants' responses through giving out fact or information, or examples from personal experience or challenging participants' responses by asking them to clarify or illustrate further such as by using sentences like 'What do you mean by that?' or 'Is this what you mean?'.

- First, if the researcher wants to explore a misunderstanding of information, giving the correct or factual information might reveal any change of response as well as clues on the misinformation that a participant might have.
- Second, participant's negative attitude or response might not be revealed directly and thus, by using examples from researcher's personal experiences, for example might elicit full expression of attitudes that otherwise would be hidden from the researcher.
- Third, inconsistencies of statements could be challenging to be interpreted later on and thus, probing[117] during interview is needed to find actual responses which should be obvious to the researcher.

Experimentation during interview was found to be effective in eliciting responses from teacher in public schools about role problems in a study by Becker (1954). From Becker's (1954) study, it was found that participants were unwilling to give honest statement about aspects related to relationship with superiors or unfavourable events that they have experienced or exist in the school where they worked that could be seen as negative to the public. Therefore, as a researcher, it is pertinent to probe further using approaches like experimentation as suggested by Rose (1945) earlier. In his study, Becker illustrated that he "played dumb" in front of some participants who responded by giving general statements of a situation. Furthermore, he also asked participants to provide examples which allowed him to understand the hidden expression through their behavioural descriptions. However, it should be noted that such tactics could be possible if the interview is conducted face to face. In general, face to face interviews are more flexible in terms of its content (Singleton Jr. and Straits, 2001).

Therefore, in this study, taking into consideration the challenges in getting honest response from participants as well as a range of tactics that I could adopt as presented by Rose (1945) and Becker (1954) during interviews to elicit frank responses, I used face-to-face interviews. These allowed me to explore further the answers participants gave in the semi-structured questionnaire (open-ended questions) given prior to the interview session. The interview session began after the completion of answering the questionnaire. Other than that, using face-to-face interviews also allows me to answer questions by an interviewee to clarify a

[117] In this study, when I probed for more detail responses from participants, I did not offer any theoretical information about giftedness to prompt responses from participants, rather I asked for further clarification by asking the participants to provide examples.

misunderstanding or to give him or her opportunity to make a request for any arising matter directly. For example, an interviewee did ask for a short break in an interview to perform prayer. I complied to her wish and after a 15 minutes break, the interview resumed.

In summary, an interview is not a perfect means of data collection. Its advantages and disadvantages are taken from Johnson and Turner (2003) which I took into consideration before deciding to use interview in my research as presented in **Table 5.14**.

Table 5.14: Advantages and disadvantages of interview

Advantages	Disadvantages
• Good for measuring attitudes and most other content of interest • Allow probing by the interviewer • Can provide in-depth information • Allow good interpretive validity • Useful for exploration and confirmation	• In-person interviews expensive and time-consuming • Possible reactive and investigator effects • Perceived anonymity by respondents possibly low • Data analysis sometimes time-consuming for open-ended items • Measures in need of validation

(Adapated from Johnson and Turner, 2003)

5.6 Determining validity of research instruments

The validity of a research instrument refer to the extent to which the research instrument measures what it supposes to measure (de Vaus, 2007). In addition, validity exists in a matter of degree which would be judged from the valid results obtained from an investigation using a particular research instrument (Colton and Covert, 2007). In this vein, a research instrument might have more than one type of validity.

There are several types of validity: face validity, content validity, construct validity, concurrent validity, criterion validity, predictive validity and multicultural validity (Oppenheim, 1992; Colton and Covert, 2007). A summary of validity types as explained by Oppenheim (1992) and Colton and Covert (2007) is presented in **Table 5.15.**

Table 5.15 Summary of types of validity

Type of validity	Description
Face validity	It refers to the degree in which an instrument appears to be measured what it intends to measure It relates to the validity of an instrument at face value It could be obtained through non-expert validation It requires the least rigorous testing
Content validity	It is the degree to which an instrument is representative of the topic and process being investigated It involves the validation by experts Items in an instrument contain constructs that are discussed in research literature
Construct validity	It refers to the degree in which an instrument measures the operationalized construct that it supposes to measure It involves numerous rigorous statistical testing to measure the unidimensionality and internal consistency of items in an instrument
Concurrent validity	It exists when an instrument was tested and its measure correlates with previous validation It could be obtained by having two different measures that measure the same construct of related construct that are administered about the same time
Criterion validity	It involves comparing a measure with an external standard e.g. a personality test scores with actual behavioural action or performance It could also be obtained through comparing the results from one instrument to the results from another instrument which measure the same construct
Predictive validity	It refers to the degree in which an instrument is able to predict or measure a variable from another variable
Multicultural validity	It exists when an instrument measures what it supposes to measure as perceived by participants of a particular culture It involves the use of certain language that appropriate to that particular targeted participants

(Taken from Oppenheim (1992), pp. 160-162 and Colton and Covert (2007), pp. 61-70)

5.6.1 Validity testing for research instruments

In this study, the process of assessing the validity of the research instruments (structured and open-ended questionnaires and interview protocol) began at the pre pilot stage in which non-expert validation was used to assess its face validity. Non-experts were given the research instruments for assessing the face validity. The instruments were refined based on recommendations by the non-experts and later underwent another validation (expert validation) to assess its content validity in which two experts were approached to assess the contents of instruments as proposed by Colton and Covert (2007).

The research instruments used were in bilingual form (Malay and English) and thus, an expert who is an English native speaker and an expert who is a Malay native speaker with English

proficiency were selected to be the experts in the validation process. They were requested to provide feedback on the clarity of the item statements, choice of terms used as well as deletion of unsuitable items

However, content validity is insufficient to assess the validity of underlying constructs posed in the research instruments. Therefore, the structured questionnaire used in this study was assessed in a pilot study. After a deletion of some of the items, the questionnaire was assessed again in the main study to measure its internal consistency. In addition, to assess the unidimensionality of the items, exploratory factor analysis using Principal Component Analysis (PCA) was used (see **Section 7.3.1** for details). This process is in line with the proposition by Clark and Watson (1995) and Thompson and Daniel (1996) in which a research instrument must undergo more than one investigation to obtain construct validity. Clark and Watson (1995) propose that:

> *'Construct validity cannot be inferred from a single set of observations, whether these pertain to a measure's factor structure, correlations with other measures, differentiation between selected groups, or hypothesised changes over time or in response to an experimental manipulation' (p. 310)*

Unlike quantitative research instruments which relies on statistical analysis (as shown in the following section for structured questionnaire), qualitative instruments are subjective and evaluative in nature due to the nature of qualitative data it gathers (Seale, 1999; Golafshani, 2003). Creswell and Miller (2000) propose three layers of validity procedures from the lens of researcher, participants and people external to the study such as other researchers or reviewers. The proposition by Creswell and Miller (2000) reflects on an earlier proposition by Lincoln and Guba (1985). According to Lincoln and Guba (1985), validity and reliability of qualitative data depend on two aspects: trustworthiness and authenticity. Trustworthiness of qualitative data refers to four criteria: credibility, confirmability, dependability and transferability (Lincoln and Guba, 1985; Bryman, 2004).

a) Credibility (internal validity)

Bryman (2004) noted that credibility in qualitative research refers to the degree of trustworthiness of the data from the people involved in a particular study other than the researcher such as the participants or fellow researchers who can provide confirmation on the researcher's interpretation of the data with their own perspective of the data. In this study, participant validation was used as a means to assess the credibility of data collected from participants' perspectives. In addition, inter-rater reliability was used to measure the credibility of data coding from fellow researchers' perspective.

b) Confirmability (objectivity)

In relation to confirmability, the extent a researcher has conducted the research in good faith really matters. Confirmability could be enhanced by documenting the procedures involved from collecting to analysing the data (Lincoln and Guba, 1985). Halpern (1983) suggests the use of 'audit trail' in which a researcher provides a detailed explanation about the processes involve. In this study, a detailed illustration of the processes involved is provided in various sections and chapters in this thesis. As an example, a detailed documentation of processes involved in qualitative analysis is presented in **Section 6.2.2.3, 6.2.2.4** and **6.2.2.5**.

c) Dependability (reliability)

Unlike quantitative data which involve assessing its internal consistency to determine the reliability of data, qualitative data involve the account of a researcher to record any processes and changes in the context of a research. This criterion is known as dependability (Lincoln and Guba, 1985). In this vein, dependability requires a researcher to keep complete records of the processes involved in a research that could be assessed by others '*to establish how far the proper procedures are being and have been followed*' (Bryman, 2004, p. 275). In this study, other than explanation of processes involved such as data collection and analysis, open-ended questionnaire, interview protocol and illustrations of different levels of coding are presented in various appendices at the end of this thesis as supporting evidences that could be audited by other researchers.

d) Transferability (external validity/generalizability)

Transferability refers to the degree of usefulness of the findings to another context or setting (Lincoln and Guba, 1985). This criterion relates to how far the findings could generate ideas for comparison as well as replication in other studies. According to Malterud (2001), in qualitative inquiry, a researcher should '*show a thorough consideration of what an adequate degree of transferability would be, in view of the assumptions of the research questions, and present a relevant sampling strategy*' (p. 485). In this study, a careful consideration has been taken to ascertain its transferability in which detailed description of the processes involved in this study, findings and limitations of the study are presented throughout the thesis.

In addition to trustworthiness and its four criteria as described above, Lincoln and Guba (1985) also include authenticity as another criterion that determines the reliability and validity of qualitative data. Authenticity refers to the degree of originality and importance of a research understudy (Lincoln and Guba, 1985). Bryman (2004) later expands Lincoln and Guba's (1985) proposition of authenticity in which he describes authenticity according to five criteria:

> *'Fairness: Does the research fairly represent different viewpoints among members of the social setting?*
>
> *Ontological authenticity: Does the research help members to arrive at a better understanding of their social milieu?*
>
> *Educative authenticity: Does the research help member to appreciate better the perspectives of other members of their social setting?*
>
> *Catalytic authenticity: Has the research acted as an impetus to members to engage in action to change their circumstances?*
>
> *Tactical authenticity: Has the research empowered members to take the steps necessary for engaging in action?' (p. 276).*

5.6.2 Reliability testing: structured questionnaire

Reliability refers to the consistency of responses from participants from repeated occasions (de Vaus, 2007). To increase reliability, de Vaus (2007) suggests that a researcher use multiple-item indicators, choose careful question wording and work out methods of coding (p. 53). The quantitative research instrument used in this study used Likert scale. The statements of items were subjected to expert validation (as discussed in previous **Section 5.6.1**). All of the items have positive statements except statement no. 17, 46 and 59. Reversed coding was applied to these three items prior to statistical analysis.

Any research instrument was subjected to reliability testing for assessing its internal consistency (Moser and Kalton, 1986; Oppenheim, 1992). In determining the scale's internal consistency, Cronbach's Alpha coefficient was used. Cronbach's Alpha coefficient refers to 'a measure of internal reliability used in the evaluations of Likert scales' (Oppenheim, 1992 p. 358). According to Pallant (2007) the internal consistency of scales relates '*to the degree to*

which the items that make up the scale 'hang together' (p. 95). The ranges of Cronbach's Alpha coefficient are 0 to 1.

Most of researchers agree that the higher the figure is the better to determine the reliability of research instrument (Kline, 1999; Field, 2005; de Vaus, 2007). Tabachnick and Fidell (2007) stated that reliability of items is important in determining an analysis of a study. They further explain that reliability of items to the question of 'How stable if the position of a given score in a distribution of scores when measured at different times or in different ways?' (Tabachnick and Fidell, 2007, p. 11). de Vaus (2007) indicated that 0.7 is an acceptable level of significance for alpha and 'the size of alpha is affected by the reliability of individual

In this study reliability testing was conducted twice: pilot study and main study. In the pilot study, the Cronbach's Alpha coefficient for 154 participants for both groups was 0.950 and in the main study, the Cronbach's Alpha coefficient for 1178 participants for both groups was 0.938 (see **Table 6.9**). This reliability value is above 0.7 as suggested by de Vaus (2007) and above 0.8 as suggested by Field (2005). Therefore, the result was satisfactorily high and thus indicates acceptable level of internal consistency.

Table 5.16: Reliability statistics (Cronbach's Alpha coefficient)

Reliability Statistics	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Pilot study (n = 154)	.950	.951	98
Main study (n = 1178)	.938	.939	60

5.7 Research design: sampling (The main study)

In this study, multiple sampling techniques were adopted. Purposive, cluster and random samplings were used at various stages of sampling process in order to suit with the needs and purposes of the overall mixed methods research design. I divided the sampling process into two stages.

5.7.1 Stage I: Determining the sampling based on demographic characteristics

Purposive sampling was used in selecting the institutes of teacher education/universities and primary schools due to time constraint and financial resources. It was chosen based on several criteria: general and specific.

a) General

i) Location: Peninsular Malaysia

Since Malaysia is geographically divided into Peninsular and East Malaysia, only institutes of teacher education, universities and primary schools that situated in Peninsular Malaysia were considered in this study. For the schools, I narrowed down my scope to one particular state in southern part of Peninsular Malaysia, Johor. I chose Johor because of personal and specific reasons. Personally, I live in Johor and thus, I am familiar with some of the locations. Specifically, Johor has eight districts: Johor Bahru, Kota Tinggi, Mersing, Pontian, Kluang, Batu Pahat, Muar and Segamat. Based on the statistics (EPRD, 2009), there are 7,655 primary schools in Malaysia. There are more than two thousands (2,268) primary schools in Johor. There are five types of primary schools in Malaysia: National, National Type (Chinese), National Type (Tamil), Special Education and Islamic schools (Government subsidiary). Based on ratio of primary schools in Malaysia, Johor has roughly balanced ratio for all different types of schools and thus, the selected sampling could be assumed to be representative of the sampling population.

b) Specific: Institutes of teacher education and universities (for pre service teachers)

i) Bachelor program

In 2006, the Ministry of Education changed one of its policies in which a bachelor program in primary school education can be offered by institutes of teacher education. Previously, institutes of teacher education only offered Diploma and Certificates in Education. In recent years, majority of the teacher training colleges have been upgraded into institutes of teacher education. However, among twenty seven institutes of teacher education in Malaysia, I narrowed my selection to those offering bachelor programs in primary education. Also, I only selected universities which offered bachelor programs in primary education. In

summary, excluding those institutions[118] and also the ones which are situated in East Malaysia left me with 15 institutions (three universities and 12 institutes of teacher education) which fit with the characteristics of the sampling in terms of location and programs offered.

ii) Prompt reply

Due to time constraints, I decided to select the institutes of teacher education and universities which responded to my request to conduct the study at the respective institutions before first week of April 2009. There were only four institutes of teacher education and a university responded before mid-April 2009 and thus, only four were selected in this study. For the schools, I went to each school which I randomly selected and met the headmaster of each school to get approval.

5.7.2 Stage II: Determining the sampling based on research designs

In this study, two main approaches were used: quantitative and qualitative approach. Therefore, the participants were selected differently in both approaches to suit with the nature of the research instruments used in each approach.

a) Quantitative design (Survey)

After I received approval letter from the institutes of teacher education and the university, I went to the respective institutions to distribute survey questionnaires to the pre service teachers. After a discussion with the administrator and some lecturers, to minimise class disruption, I purposely chose students whose classes were either before lunch break or the last class of the day. This is to ensure that the students had ample time to answer the questionnaire without taking the questionnaire back to their respective accommodation.

In addition, for in service teachers, to choose the schools from the 2,268 primary schools all over Johor, I clustered the schools into two groups urban and rural. After identifying the schools I clustered the schools again based on type of schools national, national type (Tamil), and national type (Chinese). In summary, upon clustering the schools based on location and

[118] I excluded eight teachers' training colleges which have not been upgraded as institutes of teacher education as well as universities which do not offer bachelor programs in primary school education might not fit with the needs of this research.

type, I randomly selected the schools from a list of schools in Johor. For the special education and Islamic schools, since there are only less than five special education and Islamic schools in Johor, I only conducted the study at schools which have granted me permission. The approvals from the headmasters of the selected schools were obtained as courtesy[119]. For the in service teachers, I gave them a choice either to fill in the questionnaire while been waited by me or to fill in the questionnaire when they are free and I would collect the completed questionnaire later on (a drop-off approach) as a measure to minimise any unnecessary disruption on their teaching schedules.

b) Qualitative design (Semi structured questionnaire and interview)

During the distribution of survey, I invited the pre service and in service teacher to participate in the interviews. Participants were given a choice to participate in the study and thus, the selection was based on their willingness and consent to participate in the study[120].

5.8 Research design: an overview

In previous sections, I have presented sufficient discussion on the overall process involved in this study. To recap, in this study, care has been taken to ensure that the research design is pertinent to research questions posed. A multiphase mixed methods design was selected as the research design in this study because the nature of mixed methods research necessitates the use of quantitative and qualitative approach. Research instruments used in this study were survey (structured and semi-structured questionnaires) and interview. All of the research instruments were tested in pilot study. Prior to pilot study, pre pilot study was conducted to explore the suitability of the types of data collection. Even though it was conducted using open-ended questions, it was found that there is need to explore more on participants' responses. Thus, it was decided that since this study aims to explore the

[119] As a researcher, it is compulsory for me to obtain approval from two different Ministries (the Ministry of Higher Education for pre service teachers and the Ministry of Education for in service teachers) as well as State Education Department. Approvals from respective institutes of higher education such as institutes of teacher education and universities as well as primary schools were obtained based on consideration of the deans, directors and headmasters. However, in schools, the procedure is less stringent as compared to institutes of higher education. I did not need to obtain approval letter prior to conducting the study at respective schools. Thus, I conducted my study immediately after obtaining verbal approval from the headmaster of respective school.

[120] At the end of the survey, I included a form that the participant could fill in if they are willing to be interviewed. They were asked to leave their name, contact number and email to be contacted further for setting up appointment for interview. See **Appendix 16** for details.

breadth and depth of conception of giftedness and talent among teachers in Malaysia, survey as well as interview are deemed appropriate.

I have taken into consideration the advantages and disadvantages of using survey and interview in this study as mentioned in previous section. The use of pre service and in service primary school teachers as sampling in this study is mentioned in details and justification has been provided to support the selection. The following section will present a brief introduction on the methods used for data analyses.

5.9 Methods of data analysis: a foreword

To answer the research questions posed in this study, I employed two types of analyses: statistical analysis (quantitative data) and thematic analysis (qualitative data). **Table 5.1** depicts a summary of each research question with the relevant research design, instrument(s) used as well as the analysis of the respective data[121]. Some research questions that I posed in this study were explored using one research design with a qualitative method for research questions 2, 4, 5 and 6. In addition, quantitative as well as qualitative methods were employed to answer research questions no. 1 and 3. The choice of using combination of analyses methods corresponds with the research designs used in this study.

To understand overall findings from two types of data (quantitative and qualitative), I employed an interpretive approach to uncover the substantive meanings from both findings. The interpretive approach that I used in this study is adapted from Carr and Kemmis (1986). According to their proposition, the interpretation of participants' understanding of a social phenomenon which in this study is perceived conceptions of giftedness and talent is related to my prior understanding as well as my identity as a researcher in this study.

However, it does not mean that my stand 'must be identical or that one is in some sense superior to the other' (Carr and Kemmis, 1986, p. 92). Rather, my prior understanding provides me with a means to recognise and comprehend the conception of giftedness and

[121] A detail discussion on this is presented in the **Chapter 6** followed by discussions on findings from both quantitative and qualitative data in **Chapter 7** (quantitative findings) and **Chapter 8** (qualitative findings).

talent as perceived by the participants better. Also, the dialectic relationship between my understanding as well as participants' understanding of the conception of gifted and talented provides me with opportunity to explore the topic understudy specifically in a particular social context in Malaysia. Thus, based on this justification, I adapted the interpretive approach as an underpinning theoretical basis for my data analysis.

5.10 Conclusion

In this chapter I have discussed the background and current practice in universities and institutes of teacher education which offer bachelor in education programs. I have presented an overview of research methodology used in this study. I have attempted to provide a clear account of research process by describing in details of pre-pilot, pilot and main study phases and processes; data collection methods; the research instruments and sampling procedure. Data analysis procedures are also discussed to conclude this chapter. In the next chapter, I shall present the preliminary findings of this study.

Chapter 6: Preliminary findings and analyses (Part A)

6.1 Introduction

To begin with, the findings and analyses of this study are divided into three parts. **Chapter 6** is the first chapter to discuss the preliminary findings of this study. There are six headings in this chapter: i) an overview of survey and interview analysis, ii) response rate (for survey and interview), iii) characteristics of sampling, iv) reliability testing for pilot and main study, v) inter-rater reliability for qualitative coding and vi) descriptive analysis.

Chapter 7 (Part B) presents the second part of the findings and analysis. In Part B, findings of exploratory factor analysis for pilot and main studies are discussed. In this chapter, inferential analysis was conducted to explore differences of teachers based on three aspects: group, gender and subject taken/not taken.

Chapter 8 (Part C) comprises of the last part of the findings and analysis i.e. Part C. It comprises of structured analysis for qualitative data. A further discussion and conclusion of this study is presented in subsequent chapter, **Chapter 9**.

6.2 An overview of analyses: Survey, semi-structured questionnaire and interview

In this section, I shall present an overview of the analyses used in this study. As previously discussed in **Chapter 5**, with the used of mixed methods design, the data in this study could be classified into two categories: quantitative and qualitative data. The quantitative data was gathered by using structured questionnaire in survey. Therefore, for quantitative analysis, statistical analysis was used whereas in qualitative analysis, structured analysis was used. A brief explanation of the process involved in the date collection is presented prior to each analysis.

6.2.1 Survey

In the questionnaire, each participant was assigned with subject number (code) and thus confidentiality and data security were protected. The code is for the data collection

administrative purpose such as identification of distribution location. For the purpose of data analysis in a SPSS (Statistical Package for the Social Science) file, I keyed in each response in which each item was classified as a variable and each response was given a numerical code. The coding used is shown in **Appendix 21**. To explore the sources of information of gifted and talented that teachers rely on, responses of an 'optioned' question in the structured questionnaire were gathered as presented in **Table 6.1**:

Table 6.1: An optioned question for sources of information

Sources of information
☐ Media such as newspapers, TV and radio programme, websites
☐ Books
☐ Academic Journals (e.g. Journal of Educational Psychology)
☐ Friend/family member who are gifted or have gifted child
☐ Newsletters of organisations such as National Gifted Children Association Malaysia (NGCAM)
☐ Formal training such as University Courses
☐ Workshops or seminars
☐ Others

6.2.2 Semi structured questionnaire (Open-ended questions) and Interview

In qualitative part of this study, semi-structured questionnaire and interview were used to gather data. For the interview, participants were selected based on voluntary basis (see **Section 5.7.2**). On the last page of the structured questionnaire, there was a form to be filled in with name and contact details if the participants wished to be interviewed. I contacted the participants who filled in the form to set appointment for interview. Before the interview, the participants were given a semi-structured questionnaire (13 open-ended questions) and the interview questions were based on the answers they wrote in the semi-structured questionnaire. They were required to fill in and sign a consent form and they were briefed that at any time or point of the interview session, they were allow withdrawing from the interview if they wish. The process of informed consent is significant in conducting interview as it signifies '*the beginning and not the end of researchers' ethical responsibilities toward their participants and their research*' (Seidman, 2006, p. 62).

6.2.2.1 Duration: for semi-structured questionnaire and interview session

Semi-structured questionnaires were given to participants prior to interview session (refer to **Chapter 5** for details). In this study, the participants took approximately 20 to 30 minutes to answer the semi-structured questionnaire. For the analysis, written answers of participants from semi-structured questionnaire were organised according to each question. In this instance, organisation of raw data into manageable and interpretable descriptions according to themes and relevant illustrative examples is essential for thematic analysis (Patton, 1999). A table for each question was created and written words were excerpted directly (see **Appendix 28**).

In this study, interviews lasted approximately 30 to 45 minutes per participants. For data administration and management, date, duration and location of interviews as well as participants' particulars -e.g. gender, race, age, education background or majoring, and year of studying or working- were recorded in my fieldwork notebook. However, not all of the data would be stated in this thesis such as race and location to preserve the identity of each participant (see **Appendix 22**). By omitting race in this thesis, it is hope that participants' words would not lead to any presumption by readers. In Malaysia, the issue of race is considered as a sensitive issue and to make known that some words are given by an individual belonging to certain race could lead to negative implications. Therefore, for the purpose of coding, specific code is used to identify participants.[122]

6.2.2.2 Interview administration

For the interview, to ensure the accuracy of interview data, each interview were digitally recorded using digital voice recorder. The use of verbal recording has been practiced in social research since the 50s as shown in study by Bucher et al. (1956). According to Bucher et al. (1956) even though recording was normally used in natural science fields or clinical settings, yet it also has been used by social scientist such as sociologists and counsellors. In

[122] The participant code that I used only contains the following information: participant's group (PS refers pre service and IS refers in service teacher), a number to indicate the order of interview e.g. 1 is for the first interview conducted (in this study, there are six interviews formally conducted and one informal interview) and an alphabet to indicate gender (M refers male and F refers to female). Thus, for example, PS1F refers to the first pre service female teacher and IS2F refers to the second in service female teacher have been interviewed. The same code is used for both excerpts: answers taken from semi-structured questionnaire and interview transcriptions.

current years, many researchers agree that audio recording is commonly used in qualitative research (Halcomb and Davidson, 2006; Seidman, 2006; Kvale and Brinkmann, 2009)

Audio recording is used for various reasons. According to Bucher et al. (1956) verbal recording is beneficial in which '*no verbal productions are lost in a tape recorded interviews*' (p. 359) as compared to when using note-taking method which might lead to interview bias in which only selected parts of an interview are written down by interviewer. Seidman (2006) contends that by recording interviews, researcher can '*concentrate on the topic and the dynamics of the interview'* (p. 179). He also states that by taking notes during interview, researcher might need to interrupt participants many times as writing could be time consuming and thus, it might disturb the flow of conversation.

I have anticipated that some participants might hesitate to be voice recorded and thus prior to interview, I assured them that in this study, each verbal record and its transcriptions serve as documentation for qualitative part of this study and thus, their words and opinions would be treated with full respect and responsibility. All of the participants were aware that if they do not want to be voice recorded, note taking would be used as an alternative of documentation. However, I discussed the advantages and disadvantages of using both methods (voice recording and note taking) to reassure them about the process further. It is assumed that participants might hesitate to be voice recorded due to anonymity reasons. To ensure that participants aware and understand the process involved in the interview, I briefed them about the ethical standards that I have to follow which are stated in the consent form that they have to sign prior each interview. Consents from all participants were obtained prior the interviews. The inform consent form that participants have to sign prior interview serves as '*protection for both the participants and the researcher*' (Kvale and Brinkmann, 2009, p. 71) if there are any conflict arises related to research.

6.2.2.3 Transforming verbal data to written transcripts

To analyse the verbal records, I transformed it into written words. Verbatim transcription is a process taken by a researcher to reproduce the spoken words into a written text (Lapadat and Lindsay, 1999; Halcomb and Davidson, 2006). However, transcribing is not a direct act. According to Green et al. (1997), when researchers transcribe, they are engaging in a

process called as '*an interpretive process*' (p. 172). In this process, according to them, researcher would need to decide which parts of the verbal records are important and what kind of conversational aspects need to be emphasised such as pauses, silence, or voice intonation. Researchers also need to rely on their prior knowledge on language used in the recordings as well as cultural aspects that go with it, for instance, dialect or accent. Therefore, to write down what is being heard demands researcher to engage in interpretive acts.

According to Tilley (2003a), transcribing is a process in which '*transcriber's interpretive/ analytical/ theoretical lens shapes the final texts constructed and as a result has the potential to influence the researcher's analysis of data*' (p. 750). Poland (1999) contends that researcher involves with interpretive act when dealing with ambiguous utterance from interviews. According to him, researchers tend to interpolate what seems to make sense the most when expressing ambiguous utterance while transcribing an interview. He claims that even though researchers should concern about the technique of transcribing, yet the purpose of transcribing should be given equal concern too. According to Denzin (1995) transcribing is not just an act of expressing verbal words into written forms but also interpretation of the transcription.

Therefore, bearing in mind the interpretive aspect while transcribing, I kept myself aware of my own interpretation on the verbal records and thus, I purposely selected the method that I used for transcribing. I transcribed all the interviews verbatim with dialect. According to Gibbs (2007) interview transcription is '*a change medium and that introduces issues of accuracy, fidelity and interpretation*' (p. 11). In addition, emotional contexts from interviews are not easily expressed in written words and thus, researchers might need to use conversational features while transcribing (Patton, 1999). Realising the need to maximise and maintain high level of accuracy, fidelity and interpretation, in my study, I included conversational features in the transcription such as abbreviations e.g. don't, verbal tics e.g. 'um', and pauses would be shown by … or (….)[123]. In the case of repetitions, it would be altered and rendered to more simplified versions, for instance *'I think that in Malaysia (…) there is no (…) there is no gifted schools' (PS1F 28 April 2009)* would be changed as '*I think*

[123] … is used to indicate a short pause which is less than 5 seconds. (…) is used to indicate long pause which is more than 5 seconds.

that in Malaysia there is no gifted schools'(PS1F 28 April 2009). I would also put my own notation using a bracket when it seems appropriate to make the structure or wordings look more sensible. For example, I added the word 'in amazement' and 'gifted and talented' in "*I notice in the questionnaire, there are many things that make me feel 'wow' (in amazement - my comment) … there are many new things that I don't know about (gifted and talented – my comment)" (PS2M, 23 June 2009).* To emphasise certain wordings by participants, I would bold it. Underline of words would be used to denote high voice intonation by participants to emphasise their response. However, since my study does not involve linguistic analysis, I do not adopt strict transcription convention of discourse research which emphasises also on nonverbal event and prosody as suggested by Edwards (1993). [124]

In order to minimise transcription error, I listened to each record at least three times after I have completed transcribing. It was a tedious and painstaking task and at certain point of time, I was on a verge of using a transcriptionist to transcribe the verbal records for me. The use of a transcriptionist is permissible as suggested by Maclean et al. (2004) in a qualitative or mixed method research using interviews. According to Tilley (2003b) using a transcriptionist could also enrich educational experiences of a researcher and transcriptionist.

However, in this study, I wanted to ensure that I would be familiar with my data the best I could before I started to analyse it. Therefore, I chose to do the whole transcription myself even though it took me nearly two months to finish it. According to Bird (2005), her experience doing transcription herself has enriched her research experience as well as provided her with '*learning gained outside of one institution's prescribed graduate training framework'* (p. 247). I hope that I would gain similar experience as she did by taking full charge of transcribing. Other than that, I also did not use transcriptionist because I want to make sure that I could retain the privacy and identity of my participants the best I could even though I could label each verbal records anonymously. Also, I did not inform the participants on the use of a transcriptionist when I conducted the interview. Therefore, it is

[124] According to Edwards (1993) nonverbal events are any behavioural actions that occur during interview by participants or others which are induded in transcription such as moves while sitting on a chair or door closing. She states that prosody relates to 'physically measurable dimensions' such as vowel quality and phonetic context of speakers that are represented by certain transcription symbols.

inappropriate to use a transcriptionist unless I informed the participants beforehand and they have given their consent prior to engaging a transcriptionist.

To start my qualitative analysis, I transcribed all interview entirely because I do not want to leave out anything directly or indirectly. According to Seidman (2006) if researcher opts not to transcribe entire interview, he or she can '*pick out sections that seem important and then transcribe just those*' (p. 115). However, he argues that by selecting certain parts of the interview to be transcribed, a researcher/transcriber might miss out important parts that might be left out intentionally or unintentionally. In contrast, Poland (1999) contends that by selecting which parts to transcribe and analyse, a researcher/transcriber could avoid from feeling overwhelmed with enormous data to be transcribed and analysed and thus, might be more focused on selected data. However, it should be noted such instances might be due to number of participants involve in a study as well as the duration of interviews for all participants that might be difficult to manage.

In this study, the participants involved in the interviews were six people and the duration of each interview was less than an hour. Therefore, even though it took me more than a three hour to transcribe each interview, yet the process of transcribing and reviewing the transcripts thrice was still manageable. According to Poland (1999), if a researcher/transcriber opts for selecting certain parts in the transcribing process, therefore he should '*be more selective in the review of transcript quality*' (p. 27). In this instance, Poland suggests that researcher/transcriber should review the transcripts while the audiotape recording is running. As with the matter of how much a transcriber should review the transcripts is relatively depended upon a transcriber and thus, it is very subjective. In this study, I want to ensure the trustworthiness of the data and thus, I reviewed the transcripts using three steps. First, I printed out all of the transcripts and reviewed the printed transcripts while listened to the recording interviews. Any semantic errors are noted and corrected on the paper and later on the screen. Second, I reviewed the transcripts on computer screen simultaneously while listened to the recordings. And thirdly, I repeated the first step again (using printed transcripts and listening to the recording simultaneously) and made the final amendment.

In addition, I chose to fully transcribe my interview because as suggested by Briggs (1986), it is important for a researcher to use full transcription to start qualitative analysis. This would allow a researcher to have a look at the data in broader sense first as coding the data would lead a researcher to focus on certain relevant aspects and thus it limits a researcher's attention and perspective of the data as a whole. According to Bird (2005) full transcription able to capture '*the essence, the intent and the tone of conversations*' (p. 239) and thus, it gives a researcher and other readers chance to validate the data later on. Qualitative data is less structured than quantitative data and thus one way to validate qualitative data is through other researcher's or reader's validation (Burnard, 1991; Seidman, 2006). This can be achieved only if there is full transcription. In this study, I did not involve other researcher to review the verbal recordings and transcripts as a means of validation. This is because even though I could use codes to retain anonymity yet it could also be time consuming to involve other researcher in this instance and thus, I only used participants' validation on the verbal record (from their interview session) and transcripts.

6.2.2.4 Translating Malay transcripts to English

Three of the formal interviews were conducted in Malay language. I translated their responses derived from semi-structured questionnaire and interview transcripts. Realising the process of translating is not a straightforward act as Nikander (2008) points out, the translated version was reviewed by a certified translator to review the translated transcripts. This is to ensure that I would minimise any grammatical and syntactical error in the transcripts. For another three transcripts, even though the interviews were conducted in English, yet it might be up to the standard of a native English speaker. Thus, there would be grammatical mistakes in their responses but I retained any of the mistakes to retain the originality and authenticity of their words as long as it was still comprehensible.

To validate the authenticity and accuracy of the verbal records and transcripts, participants were given the chance to review, amend and omit any part of the transcripts if they wish as suggested by Kvale and Brinkmann (2009). In this study, after I have transcribed participants' responses, each participant were given a printed and soft copy of the transcript and verbal recording which was saved in a compact disk (CD). The printed copy and CD were sent using air mail whereas the soft copy was sent using email in a Microsoft Word 'doc' file.

Participants who used Malay in their interviews were given a translated version of their original transcript as well.

6.2.2.5 Thematic analysis process

In addition, responses from semi-structured questionnaires and interview transcriptions are analysed structurally. Themes were derived, coded and recoded at initial stage. In overall, the qualitative data analysis involved multiple steps as suggested by Boyatzis[125] (1998), Braun and Clarke[126] (2006), Kvale and Brinkmann[127] (2009) and Seidman[128] (2006):

- First, I read through every answer from the semi structured questionnaire and interview transcriptions in its entirety to familiarise myself with the data. According to Braun and Clarke (2006) to familiarise oneself with research data, it is essential to read, re-read and note down any initial ideas. This process is significant prior to developing codes or themes. Boyatzis (1998) states that through familiarisation of data, a researcher is recognising '*the codable moment*' (1998, p. 9) and this involves awareness of what is important to be highlighted and how consistent it is throughout interview.
- Second, I reviewed each transcription and highlighted interesting and relevant sentences as suggested by Seidman (2006). I used highlighters and coloured pens to mark relevant excerpts and assign codes using 'post-it' notes. This is what have been illustrated by Braun and Clarke (2006) in their article. They described the process taken in '*generating initial codes*' (Braun and Clarke, 2006, p. 89) in which equal attention is given to all data and then selection of relevant aspects are made before assigning the selected excerpts with codes. Using highlighters, coloured pens or 'post-it' notes were manually done in this study. If using Microsoft Word doc, selection of excerpts can be done by using different font colours or text highlight colour but in this study, I used

[125] Boyatzis (1998) propose three stages of developing themes and codes for theory driven approach and prior-research-driven approach: generating code from theory (theory driven) or previous research (prior-research-drive), reviewing and rewriting codes for applicability to the raw information and determining the reliability using inter-rater validation (p. 40).

[126] Braun and Clarke (2006) provide six stages of analysis: familiarizing with data, generating initial codes, searching for themes, reviewing themes, defining and naming themes and producing the report (p. 87).

[127] Unlike Boyatzis (1998) and Braun and Clarke (2006), Kvale and Brinkmann (2009) did not propose any stages of analysis. Rather they provide detail processes of coding, categorising and interpreting data. For more detail explanation, see Kvale and Brinkmann (2006, pp. 201-218).

[128] Seidman (2006) gives detail clear descriptions and examples on how to coding and how to share information with others especially when a study involves more than one researcher. Since the data might be shared with others, it is helpful to have certain managing approach such as assign profiles to individual data, make categories of data, mark passages and group them into categories and highlight the link within and among categories, see Seidman (2006, pp. 119-131) for detail.

different font colour to differentiate between English and Malay transcriptions. English transcriptions which were translated version was in red but when it was printed black and white, the shade was slightly lighter and thus, it was easy for me to identify the English version.

- Third, I combined answers from semi structured questionnaire and excerpts from transcriptions and organised them in a table form according to questions posed in semi-structured questionnaire and interview protocol. The final version of the combination of both data was organised as presented in **Appendix 28**.
- Fourth, I reread the written answers from semi structured questionnaire and excerpts from interview transcription that I have organised in tables and highlighted relevant words as rough codes. I did that to immerse myself with the data as suggested by Burnard (1991).[129] According to him, the process of rereading transcriptions and making notes for coding is aimed to immerse researcher in the data. In addition, coding is known as a process in which researcher put '*a keyword or keywords to a text segment*' (Kvale and Brinkmann, 2009, p. 201) to classify it. Kvale and Brinkmann (2009) explain further that coding can be divided into: concept driven or data driven. In concept driven coding, a researcher uses codes based on literature whereas in data driven coding, researcher develops codes deriving from the raw data and later on refer to literature. In this study, a wide range of codes are derived from the findings and later on refer to literature such as research theories and thus, it is data driven coding. The codes that I used in the coding process are a word or short phrases as suggested by Saldaña (2009). According to him, a code symbolises '*a summative, salient, essence-capturing, and/or evocative attribute*' (Saldaña, 2009, p. 3) of the data. Up until these four steps, it was done manually. In short, the process of thematic analysis involved in this study could be summarised into three steps: identifying response codes, creating constituent themes and dimensionalising or refining constituent themes into major themes. In this study, the three levels of coding as illustrated in **Appendix 28** replicate the steps as suggested by Castro et al. (2010).

[129] Burnard (1991, p. 462-464) states fourteen stages of qualitative analysis: note making, reread transcripts and notes, develop open coding, refine open coding, re-categorise codes, external validation, reread transcripts and assign to categories of coding, refine coding, assign and assemble transcripts and codes together, assign headings and sub-headings, participant validation, keep files in order, write up analysis and organise findings (either to write findings without linking it to literature or write findings by linking to literature). The stages that he proposed are laborious and exhaustive but by doing so, researcher would be able to immerse and familiarise with the data.

- Fifth, I repeated the process of organising, highlighting and coding by using qualitative data analysis software called NVIVO 8. NVIVO was chosen and used because it has '*the simplest support for hierarchical codin*g' (Gibbs, 2007, p. 107). It also has matrix searching options that really help me to organise and find similarities and differences of themes among participants.
- Finally, with manual coding and computer-assisted coding, I refined the various relevant themes that would make up of '*thematic network*' as suggested by Attride-Stirling[130] (2001, p. 385). After developing codes and arranging it into categories of themes, the next step is to elaborate the patterns emerged from it in a broader scope (Aronson, 1994). Aronson (1994) also states that elaboration of codes and its patterns needs to be backed up by related literature. In addition, in this study, to measure the reliability of coding that I developed, inter rater reliability test was attempted using Fleiss's Kappa (Fleiss et al., 1969; Fleiss, 1971). This is in line with suggestion by Aronson (1994) and Teddlie and Tasakkori (2009) to ensure the quality of the data coding (see **Section 6.6** for details on the inter-rater reliability of coding).

6.2.2.6 Inter-rater reliability: An exploration on the qualitative coding agreement

As previously discussed in **Section 5.6**, reliability of qualitative data relates to the transparency of the process involved in a particular research. In this study, to determine the reliability of coding that I developed to represent the emerging themes from participants' responses, inter-rate reliability was used. According to Teddlie and Tashakkori (2009), inter-rater reliability is a way to verify a researcher's interpretation of participants' view on a phenomena or behaviour through measuring agreement between two or more raters. In addition, this process is also known as '*member checks'* (Tashakkori and Teddlie, 1998, p. 92) in which it could occur at the beginning of an analysis or at its conclusion that serves as a way for a credibility check.

In addition, inter-rater reliability serves as '*a check-coding'* (Scott, 1955, p. 321) from participants' responses which are analysed and interpreted into smaller components based

[130] According to Attride-Stirling (2001) 'thematic network' refers to patterns of themes resulted from gathering sub-themes together based on common ground. She postulates that a thematic network could comprise of basic, organising and global themes. Each would reflect the data in hierarchical or web-like representation. For details, refer to Attride-Stirling (2001).

on a researcher's representation of the data. In this instance, each component represents a theme which needs verification from others as raters, other than the coder. According to Hout et al. (1987), inter-rater reliability relates to a comparison of 'coded discrete variables' (p. 146) which is a usual practice in social science research. In this study, the inter-rater reliability testing assessed 105 excerpted statements from participants' responses. Each statement was paired with a code that represents a theme. Three independent raters were selected based on the basis of their knowledge of conducting qualitative research and general understanding about the topic understudy.

There are several statistical analyses could be used in calculating inter-rater reliability such as Cohen's Kappa (Cohen, 1960; Cohen, 1968) and Fleiss's Kappa (Fleiss et al., 1969; Fleiss, 1971). See **Appendix 26** for further description). The different analysis is used depending on the number of raters involve in the rating process. For example, Cohen's Kappa works when there are two raters involve in the rating (Cohen, 1960; Cohen, 1968). In contrast, when there are three or more raters, Fleiss's Kappa might be more appropriate (Fleiss, 1971). According to Light (1971) the use of multiple raters could be conducted either in pairwise or g-wise[131] rating because it leads to increase the chance of consistency of rating.

In addition, Fleiss (1971) proposed the use of pairwise raters to determine the level of agreements among raters. In this study, Fleiss's Kappa (Fleiss et al., 1969; Fleiss, 1971) is used to explore the level of agreement among three raters for the coding that I developed from participants' responses. As suggested by Castro et al. (2010), inter-rater reliability using Fleiss's Kappa measures agreement among inter-raters which is hypothesised beyond chance. From the analysis using AgreeStat (Gwet, 2010), the inter-rater reliability for the raters was found to be Kappa = 0.651 ($p<0.001$), 95% CI (0.511, 0791) as presented in **Table 6.2.**

Table 6.2: AgreeStat output

Method	Value	StdErr	95% CI
Kappa	0.65107	0.070627	0.511 to 0.791

[131] In pairwise rating, raters are paired in a group and each pair would rate similar items. Then the ratings from all pairs are calculated to determine the Kappa value. g-wise rating refers to number of raters involve in the rating process without being grouped in pair.

Using the strength of agreement as suggested by Landis and Koch (1977), it was found that the inter-rater agreement for this study is substantial (refer to **Table 6.3**). Even though their suggestion on the divisions of strength of agreement is subjective and based on their judgement, yet their proposition was used in other studies such as by Goldberg et al. (1986), Gross (1986), and Abubakar et al. (2004).

Table 6.3: Kappa statistic

Kappa statistic	Strength of agreement
< 0.00	Poor
0.00-0.20	Slight
0.21-0.40	Fair
0.41-0.60	Moderate
0.61-0.80	Substantial
0.81-1.00	Almost perfect

(Source: Landis and Koch, 1977, p. 165).

6.2.2.7 Interpreting qualitative data

In assessing the validity of qualitative data, data interpretation is important (Yin, 2011). Yin (2011) suggests five aspects involve in qualitative interpretation:

- *Completeness (Does your interpretation have a beginning, middle and end?)*
- *Fairness (Given your interpretive stance, would others with the same stance arrive at the same interpretation?)*
- *Empirical accuracy (Does your interpretation fairly represent your data?)*
- *Value-added (IS the interpretation new or is it primarily repetition of your topic's literature?)*
- *Credibility (Independent of its creativity, how would the most esteemed peers in your field critique or accept your interpretation?) (p. 207)*

In this study, as mentioned previously, the interpretation process of the qualitative data began with transcribing and translating the transcripts to English (which applied to three transcripts). All of the translated and English version transcripts were verified by a certified translator. Following that, excerpts were selected from full transcripts and were assigned with codes that represent specific themes. To ensure the reliability of coding, inter-rater reliability testing was conducted (refer to the previous **Section 6.2.2.6** for details). As

discussed in the previous section, codes were derived from the data (data driven coding). Later, the prevalence of themes extracted from participants' responses, simple tabulation was applied because there were only six participants involved in this study (see **Section 6.4** for details of low response rate for interviews). Example of tabulation adopted in this study could be seen in the discussion of qualitative findings throughout **Chapter 8**.

6.3 Response rate for the survey (structured questionnaire)

As this appears to be the first study to explore on conceptions of gifted and talented among in service and pre service primary school teachers in Malaysia, it is impossible to compare the response rate with previous studies conducted in Malaysia. Three thousands questionnaires were prepared and 2814 were distributed to in service and pre service teachers. **Table 6.2** shows the number of questionnaires that were distributed and returned upon completion. I personally distributed and collected the questionnaires from participant. I self-administered the questionnaires to ensure high response quality.

In a study by Heerwegh and Loosveldt (2008), it was found that face-to-face survey able to minimise 'don't know' response as compared to web survey. Other than that, face-to-face survey also could lead to more response from respondents as compared to by mail (Dunning and Cahalan, 1973; Bellizzi and Hite, 1986; Krysan et al., 1994). Furthermore, according to Lovelock et al. (1976) self-administered questionnaires could yield more accurately controlled samples and increase awareness of nonresponse bias. Other than that, in face-to-face survey, the researcher has the opportunity to interact directly with the participants in which the researcher could detect '*satisficing behaviour and attempt to reduce that behaviour (e.g. reducing task difficulty by explaining the questions)*' (Heerwegh and Loosveldt, 2008, p. 842). However, according to Heerwegh and Loosveldt (2008) explanation or clarification on items should be strictly on repeating the question and clarifying terms used in the questionnaire only.

Despite evidences from previous studies on the response rate of self-administered survey[132] (Harris, 2008; Lara, 2009; Genco, 2010), I did not get more than 50% of the distributed

[132] Lara (2009) and Genco (2010) conducted mixed method studies for their PhD research. Both studies are similar to my study; exploring conceptions of giftedness in Lara's study and methods used to identify gifted students in Genco's

questionnaires back. In this study from a total of 2814 questionnaire distributed, 1178 are returned and out of which 1168 were usable (valid and completed with no item left unanswered). This yields a response rate of 41.2%. Even though this response was considered low yet it cannot be a determinant aspect in judging the quality of response of the study.

From studies among the factors that are identified as influencing response rates are sensitive topic (Tourangeau et al., 2010), topic of interest (Groves et al., 2004), characteristics of respondents (Faulkenberry and Mason, 1978; Groves and Peytcheva, 2008), nature of the questionnaire design (Groves, 2006) and incentive given for participation (Nederhof, 1983; Mizes et al., 1984; Bellizzi and Hite, 1986; James and Bolstein, 1990; Church, 1993; Armstrong and Yokum, 1994; Willimack et al., 1995).

Despite the evidence from such studies, however there is no agreement among researchers on the effect of response rates and survey quality. This is because from various studies have shown that high response rate does not correlate with survey quality such as by Curtin et al. (2000) and Keeter et al. (2000), and Groves et al. (2004). Moreover, according to Groves (2006), random sampling that a study used would allow a study to retain its value of unbiased sampling and thus despite low response rates, it would not affect the quality of available data.

Table 6.4: Response rate

Prepared	Distributed	Returned	Unreturned
3000	2814	1178 (41.8%) • In service (632 over 2268) (27.8%) • Pre service (546 over 546) (100%)	1636 (58.1%)

Table 6.2 shows that the overall response rate is low due to the low response rate of the in service teachers which is 632 of 2,268 (27.8%) questionnaire distributed. For the pre service teachers, since the distributions of questionnaire were in class settings, the number of the

study. Lara's study involved 230 participants from nearly 2000 community members of Hoope Valley Indian Reservation (HVIR). Even though it is not clearly stated the total number of the HVIR community members, yet in broader sense, it could be concluded that the participants in her study was 10% from the total number of the community. Genco (2010) distributed to 'approximately 29 teachers' (p. 53) in her study and it is not stated the total number of population for her study.

responses was based on the class attendance[133]. After permission was granted, I went to their classes after lectures ended. There are 546 pre service teachers participated in this study and their response rate is 100% (546 of 546 questionnaire distributed and returned).

6.3.1 Low response rate from participants in survey: in service teachers

The low response from the in service teachers -i.e. 632 of 2,268 distributed surveys were filled and returned- was mainly due to several reasons. First, even though I waited for several hours at each school when distributing the questionnaire, some of the teachers requested to fill in the questionnaire at their free time and asked me to collect it later. I would come back to the school to collect the questionnaires on specific date as requested by the teachers. However, on the day of collection, some teachers failed to return the questionnaires even after being prompted.

Second, some of them refused to fill in the questionnaire when they realise that they have little information about the topic understudy. For example, a teacher said that since giftedness is relatively new issue emphasised in Malaysia, she has little information about it and thus hesitated to answer the questionnaire. It is unsure whether her hesitation was due to little information about gifted and talented or the topic is not of her interest. I did not pursue the matter deeper as she was not willing to be interviewed for explaining her reasons in details.

Third, the research topic might be not a topic of interest for the majority of in service teachers and thus perhaps resulted in the low response rate from them. Even though gifted and talented is not a controversial issue as compared to religion or political orientation, yet if it is not considered as a topic of interest for some of the in service teachers therefore it is

[133] When I went to their classes, I was introduced by the lecturers to their respective students (i.e. pre service teachers) prior to the distribution of questionnaire. Even though I informed them that I would only distribute questionnaire to students who agreed to participate in the study, yet all students were willing to participate in the study. A brief introduction of me by their lecturers might prompt them to participate in the study yet there is no way I could confirm my assumption. In an informal interview (off record) with one of the pre service teachers that I interviewed, she told me that she does not know much about gifted and talented but what prompt her to participate in my study was that she wanted to contribute something to this study. Also she wanted to have further discussion with me (as I told them in my briefing that they could have further discussion as they wish after completing questionnaire or interview session) to know more about gifted and talented.

expected that the response rate might be low. Furthermore, according to Groves et al. (2004), people would likely to respond to a survey when the topic is a topic of interest.

Fourth, the participants did not receive any incentive for the participation in the survey. Previous studies have shown monetary incentives did affect the participants to participate in a study (Mizes et al., 1984; Bellizzi and Hite, 1986; Armstrong and Yokum, 1994). However, in a study by Singer et al. (1999) found contrasting findings. In their study, it was found that the participants' willingness to participate in a survey was varied depending on the types of survey. It was found that participants' willingness to participate in a face to face survey was not influenced by the information about the incentives that they would receive. However, participants' willingness to participate in a mail survey was significantly influenced by the pre-paid incentives that they received together with the survey through mail. In this study, I did not give participants any monetary incentive for their participation in this study and therefore, it is assumed that their willingness to participate in this study is not driven by any incentive.

6.4 Response rate for interview

To encourage participants to participate in the interview, I purposely went to all of the respective locations to conduct the survey. I believe that by physically present at those locations would allow me to build rapport with potential participants for the interview later on. According to Seidman (2006) interview requires a researcher '*to establish access to and make contact with potential participants whom they have never met*' (p. 12). He also contends that initial contact visit is necessary to develop mutual respect between a researcher and participant. This mutual respect is essential in order to minimise power relation as well as to maximise cooperation and honesty from participants. However, despite the rapport that I have built with potential participants for interview, it was unexpected that not many participants were willing to be interviewed.

In deciding the number of participants to be interviewed, I purposely decided the number of participants for the interview (a participant to represent each group, gender and race[134]).

[134] Six participants for each group i.e. pre service or in service that represents three main races in Malaysia: Malay, Chinese and Indian and comprise of male and female equally and thus, the total numbers of participants are twelve.

Thus, ideally there would be twelve participants in this study. This study involved exploratory study and thus, to have a representative of individuals from two groups of understudy from different gender and race is an ideal sampling. In this study, I let all participants knew that I required twelve participants for the interview when I briefed them about the study while distributing structured questionnaires to them. According to Seidman (2006), it is best to inform the participants about the nature of the study in general and '*to be explicit about what will be expected of*' them (p. 48). In this study, participants were informed about the study in general as well as the expectations on them which are limited to their commitment and also right to withdraw from the interview at any time or postpone the interviews for another time regardless of the reasons.

However, less than fifteen participants have volunteered to be interviewed. There were eight females (five of in service teachers and three of pre service teachers) had volunteered to be interviewed. Since there were five in service teachers had volunteered to be interviewed; only three were selected. For the pre service teachers, since they knew how many participants that I required for my interview, even though not many of them volunteered by filling in the provided form, two pre service teachers came to me after I collected the survey to inform me about their willingness to be interviewed and thus, time and location were set after that. Another one pre service teacher was selected from the forms participants have filled in. She was purposively selected based on her race[135]. A detail demographic data of the participants (pre service and in service teachers) is presented in **Appendix 23** and **24** for reference. The interview participants[136] that participated in this study are summarised as follows:

- ***Pre service teachers***: Three were selected in this study. Two were in their final year and one was in her third year of study. All of them major in different programs: one of them majors in Teaching English as Second Language (TEASL) and two of them major in Math and Science. All of the interviews were conducted in their respective institutions[137]. Only one interview

[135] Her race is known based on her name. In Malaysia, it is a usual scenario in which a race of an individual can be known based on his or her names as a person's name carries racial identity.
[136] A summary of participants' data is presented in **Appendix 22**. Three of the interviews were conducted in English. However, some of the participants used Malay words in reference to specific terms or situations even though in general they used English primarily during the interview. Therefore, I shall present the excerpts from the whole transcripts which contain Malay words where appropriate in **Chapter 8**. To assist reader, I provide the English translation following each of the Malay words used by participants for comprehension.
[137] Since all of them are females, there is no issue to be in a close proximity with them. Therefore, one interview was conducted in an empty classroom and two were conducted in their college rooms after class. They invited me to go to their rooms because it is convenient and they felt comfortable for the interview to be conducted there.

was conducted in English (the pre service teacher who is majoring in TEASL) whereas the other two interviews were conducted in Malay.

- ***In service teachers***: Two of them have less than 10 years of teaching experience and one of them has more than 20 years of teaching experience. Only one has a first bachelor degree in other discipline but has a diploma in education whereas two of them have bachelor degrees in education with different majoring. Interviews were conducted in variety of places such as an empty classroom, a library and also a research room (the participant came to a research room in the Faculty of Education, UTM where I work). Two interviews were conducted in English.

The locations for the interview were varied and were decided upon participants' consent. In most cases, the participants suggested the location for the interview as I wanted to make sure that they were comfortable when they were being interviewed. Thus, even though I might list some possible locations, yet I let the participants to have the final say on the location. According to Converse and Shuman (1974), the location for the interview is essential for getting frank responses as participants might be feel or act more like themselves in familiar territories as compared to when it is conducted in unfamiliar territories. In this study, a participant[138] agreed to be interviewed in a research room in my faculty (at the Universiti Teknologi Malaysia – UTM) because she felt more comfortable to be interviewed in a different place other than her school or her home. When she was asked her reasons, she explained that she did not want any possible interruption from her colleagues or students during the interview.

For the male participants, initially, three have volunteered to be interviewed. Yet, when I contacted a male in service teacher to fix the date for the interview session, he refused to be interviewed. Another two participants (both are pre service teachers) were willing to be interviewed but withdrew after answering the semi-structured questionnaire. Since one of them had answered the semi structured questionnaire completely, I requested for informal interview in which I recorded the reasons of their withdrawal from the study. The informal interview could provide valuable insight on the unpredictable challenges conducting this

[138] She is a course coordinator in her school and thus, normally she is sought by various teachers during school hours for consultation or reference. When I met her in school, I could tell that she is a quite popular teacher among students too in which lots of students stopped her just to have a chat with her when she walked me to my car. I do not think that I was the cause for her in getting extra attention from the students as some of them seemed to ignore my presence when they approached her.

study. In short, I managed to interview only six female participants but no male participant either in service or pre service teachers. Low response rate in interview perhaps has similar reasons with low response rate in survey.

Even though, I could not get male participants to be interviewed in this study, yet the challenges and uncomfortable power relations that I have to face is considered as '*politics of interviewing*' as what stated by Limerick et al. (1996, p. 449). They proposed that interview could lead a researcher to discover new information yet the discovery process means a researcher has to face the challenge of uncomfortable feelings, and contradictions. They also assert that it is not unusual for a researcher to face with a power relation with participants. As asserts by Nunkoosing (2005) interview presents different challenges to both interviewer and interviewee. In this vein, Nunkoosing proposed that interview challenges the interviewer's skills to seek information from the interviewee '*as seeker of knowledge and methodological expertise*' (p. 699). As for the interviewee, in his words, Nunkoosing contends that '*interview invites and persuades individuals to think and talk – that is to discourse – their needs, wants, expectations, experiences, and understandings at both the conscious and unconscious levels*' (p. 699).

Even though I acknowledge the existence of power relation between me as a researcher and the participants, yet I was not totally prepared for the withdrawal of participants from this study. In any study using interview, any form of hesitation or even refusal for interviews could be considered as expectable yet according to Converse and Schuman (1974) such proposition and too much acceptance of refusals might diminish a researcher's efforts. Therefore, they suggest that at least researchers should attempt to explore the reasons of such refusals. In this study, I attempted to investigate further on their hesitation which led to refusal to be interviewed in an informal interview.

In general, from the informal interview, I discovered that to participate in an academic research could be a daunting experience to some teachers who perceive that they have to be as informative as they could to contribute meaningfully to a study. From the informal interview conducted with two male pre service teachers who declined to be interviewed, one of them told me that they do not know much about gifted and talented because in their teaching training courses, the focus is on students who are academically low achievers. One

of them said "*It is not (sic) teachers do not know. In institute of teacher education, the focus is on the weak student …*[139] *(I) don't know how to deal with gifted students" (PS1M, 23 June 2009).* He further explained that *"the information about giftedness is scarce".* Another pre service teacher said that *"I notice in the questionnaire, there are many things that make me feel 'wow' (in amazement – my comment)(…) there are many new things that I don't know about (gifted and talented – my comment)" (PS2M, 23 June 2009).* Unlike the female participants, even though they are also unsure about certain aspects of gifted and talented, yet they were more willing to share their views on gifted and talented as compared to the male participants. One of the male pre service teachers even said that "*If it is just for opinion, (I) can but if it is possible, I don't want to talk about something based on my opinion without information*" *(PS1M, 23 June 2009).*

From their responses, it could be summarised that their refusal reflect their anxiety or insecurity to participate in an academic research. From one of the responses, a participant assumes that participating in an academic research means that he has to provide factual information, not his personal view or understanding about certain issues understudy. According to Converse and Schuman (1974), during an interview, it is common for participants to be '*appealed to on an intellectualised level*' (p. 73) and thus, this conscious perception on how they should portray themselves as thoughtful and well-informed on the topic understudy might lead them to withdraw from participating in this study.

In this instance, it was a paradoxical situation that I have to face as a female researcher to interview reluctant male participants in convincing them that I am impartial and not judgmental on their response. In addition, knowing my social identity[140] prior the interview might also influence them to withdraw from this study. In short, my gender and social identity -i.e. a female PhD student and an academic staff (on a study leave) - might also have

[139] A simple three dots i.e. … is used for less than 3 seconds. For a pause longer than 3 seconds (…) is used.

[140] When I introduced myself to the participants, at first I purposely limit the information about my identity just as a PhD student at Durham University, United Kingdom (it is because to do a PhD without a sponsorship is rare in Malaysia and normally only academic staff in any local university do a PhD at local or overseas university). However, somehow participants knew my other identity as an academic staff. In this vein, it seems that my status as a PhD student as well as an academic staff in one of the local universities made them to perceive me as an authority or expert in the field of gifted education. Even with the female participants, I did not self-disclose myself too much because I realise that excessive self-disclosure might negatively reinforce their responses or behaviours. In a study by Mann and Murphy (1975) it was found that intermediate self-disclosure might significantly improve the participants' reactions toward the researcher. Yet, in this case, even though one participant asked me about my own view on gifted and talented students during the interview, I did not disclose my personal view on gifted and talented students. I informed her that I would discuss anything about giftedness after the interview ended though.

influenced on how the female and male participants react. Even though, I tried to minimise any inequality inherent in the research relationship with my participants, it seems that I did not manage to convince the male participants by downplaying my gender and social identity and desexualising the research interaction even.

While the females were more open and cooperative in this study (for the interviews), males were more reserved and hesitated when I first approached them to participate in the interviews. This is not a new scenario in any research. In two different studies by Arendell (Arendell, 1995; Arendell, 1997) on divorced individuals, she found that men reacted differently from women when asked about personal relationship. In addition, she further illustrates that gender identities and hierarchy are influential factors in interview interactions as well as participants' responses. In summary, gender the researcher-participant relationship is 'inevitably complex, multifaceted, and dynamic' (Arendell, 1997, p. 364).

However, other than social identity, I aware that there might be difference in the interpretive aspects during interview as proposed by Riessman (1987). In Riessman's (1987) study, it was found that interpretive aspects in the interview have no relation with gender. Also, she found that gender similarity between the interviewer and participants does little help in the interpretive process of different narrative styles used by participants. In addition, she also contends that a researcher's personal framework -i.e. includes educational, cultural and social components- might influence the interpretive aspects involve in interview as well. Therefore, she emphasises that researchers should be aware off different '*narrative genres or forms of telling*' (Riessman, 1987, p. 172) that participants used during qualitative interviews especially as well as researcher's personal perspectives. In this study, I found only minimal differences exist in terms of the participants' narration. However, keeping in mind about Riessman's (1987) proposition, I followed suggestions by Rose (1945) to be objective and honest during the interviews (see **Chapter 5 – Section 5.5.2.2** for details).

Despite the low response rate among participants for the interviews, since I have prepared mugs as tokens of appreciation, I gave each participant a mug at the end of the interview session even though they did not anticipate in getting it prior to the interviews. Therefore, in short, their decision and willingness to participate in the interviews were not influenced by the incentive that I gave.

6.5 Characteristics of the samples

The background data of sampling is presented in **Appendix 23** for in service teachers and in **Appendix 24** for pre service teachers.

Table 6.5: Summary of characteristics of pre service and in service teachers

	Pre service (n=546)	In service (n=632)
Gender (n = 1178)		
Female	375	456
Male	171	175
Race		
Malay (n = 952)	453	499
Chinese (n = 132)	77	55
Indian (n = 82)	16	66
Others (n = 12)	0	12

Table 6.3 shows that female participants are the majority for both groups (pre service and in service teachers). This is in line with the existing statistics of pre service and in service in all over Malaysia. In terms of race, the majority of pre service and in service teachers are Malay. Based on Malaysia National Consensus 2009, Malay makes up almost half of the entire population in Malaysia (DSM, 2010). Thus, it is expected that the ratio of both groups would be in parallel with the statistics.

6.5.1 Characteristics of the pre service teachers

Out of 546 questionnaires distributed to the pre service, a total of 546 were returned. The respondents were predominantly female (n = 375, 68.7%). In Malaysia, the enrolment ratio of female students in institutes of teacher education is higher than the male as in 2008 (EPRD, 2009). In the Malaysian Education Statistics 2008 (EPRD, 2009) 23,931 of 33,744 (70.9%) enrolments in 27 Institutes of Teacher Education in Malaysia are females and thus, the samples in this study are based on the existing ratio (see **Appendix 11**). Even though the questionnaire did include race in the personal characteristic section, yet it is impossible to compare the percentages of the samples from the total population of pre service teachers in the statistic provided by the Ministry of Education because there is no statistic available for race in the Malaysian Educational Statistic 2008 or the previous year.

The highest percentage of participants was Malay female pre service teachers which are 306 of 546 (56%) and lowest percentage of participants was Indian male pre service teachers which are 6 of 546 (1%). A summary of the total number of pre service teachers is presented in the **Table 6.4** with the frequencies.

Table 6.6: Total number of pre service teachers based on race

Race	Female	Male	Total
Malay	306 (56%)	147 (27%)	453
Chinese	59 (11%)	18 (3%)	77
Indian	10 (2%)	6 (1%)	16
Others	0	0	0
TOTAL	**375**	**171**	**546 00%)**

6.5.2 Characteristics of the in service teachers

Table 6.5 shows that the majority of the in service teachers participated in the study (56%) was Malay female. Like the pre service teachers, the ratio of female in service teachers was greater than the male in service teachers which was 72% (n = 456) from the overall 631 valid participants. Other than Malay, Chinese and Indian, there were other ethnicities listed by the participants in 'others' option. There are three ethnicities listed: Iban, Melanau and Malbari[141]. Three participants stated their ethnicity as Iban (a female teacher and two male teachers), and another three as Melanau (three participants: two female teachers and a male teacher). The other three female in service teachers stated their ethnicity as Malbari, Iban and Melanau are ethnic groups from East Malaysia (Sarawak and Sabah).

Table 6.7: Total number of in service teachers based on race

Race	Female	Male	Total
Malay	353 (56%)	145 (23%)	498
Chinese	46 (7%)	9 (1.5%)	55
Indian	51 (8%)	15 (2.4%)	66
Others	6 (1%)	6 (1)	12
*Unknown	0	1 (0.1%)	1
TOTAL	**456**	**176**	**632**
TOTAL (valid)	**456**	**175**	**631 (100%)**

* Unknown refers to a participant who did not state the race or ethnicity

[141] In Malaysia, a group of Indian Muslims is often referred and as Malbari. The usage of Malbari as an ethnicity is rare as it is considered as an informal term used to address oneself as an Indian Muslim. This is to distinguish between a Malaysian non-Muslim Indian with a Malaysian Muslim Indian since a Malbari has similar facial feature like any Indian from other part of the world. For further details, see an article by Khoo (1971).

The majority of in service teachers have a bachelor degree (n = 251, 40%) and have working experience for more than a year (n = 369, 58%) (See **Table 6.6**). Majority of them works in national schools (n = 494, 78%). In Malaysia, currently there are 5795 national schools in Malaysia (Lee, 2004). There are 1292 National Type (Chinese) schools and 523 National Type (Tamil) schools. There are also Special Education schools (28 schools) and 16 Islamic schools (government subsidiary) all over Malaysia (see **Appendix 10)**. Six hundreds and fourteen in service teachers who participated in the study are full time teachers (97%). There were 65 schools involved in this study. The lists of schools are presented in **Appendix 24**.

Currently in Malaysia, the academic qualification to be a teacher has improved tremendously since the early years of independence in 1957. In the late 50s up until the 70s, with the urgency to have local teachers due to its shortage, the minimum requirement to be a teacher is Low Certificate Education (LCE) which is equivalent of nine years of education. The recruited teachers were given teaching training in teacher training colleges during school holidays (Lee, 2004). According to Lee (2004) in 1967 the minimum academic qualification to be a teacher is Malaysian Certificate of Education (MCE) which is equivalent to an O-level. Around this time also the Ministry of Education reconstructed the teacher training program with the introduction of specialisation either on primary or secondary school teaching. With the establishment of more teacher training colleges and faculties of education in various universities, the academic qualification is also improving in which the minimum requirement to be a teacher in Malaysia is a diploma in education (for primary education) and a degree (for secondary education). This practice was prevalent up until the 90s. In recent years, starting in 2006 a new policy was introduced and implemented in which primary school teachers are required to have a tertiary i.e. degree in Education. There are various programs conducted in various universities and institutes of teacher education to meet the requirement. Also, special programs for in service teachers to gain a bachelor degree are introduced in which they are entitled to have a twelve weeks break from their teaching position to attend such courses in various universities and institutes of teacher education across Malaysia.

In Malaysia, to be a full time teacher upon graduation, a teacher needs to work for three month under probation before being confirmed as a full time teacher. Currently, a part time teacher or substitute teacher is normally a retired teacher who works on part time basis and

normally meant to substitute a teacher on a maternity leave, for example for a short time period. In some cases, a trainee teacher[142] is a final year student i.e. pre service teacher who has finished taught courses and is doing a teaching practicum.

Table 6.8: Characteristics of in service teachers

Education level (n = 631)		Years of teaching (n = 631)		Type of school currently teaching (n = 631)		Teaching status (n = 631)	
SPM	149	Less than a year	86	National	494	Full time	614
STPM	69	1 to 5 years	177	National Type (Chinese)	77	Part time/ Substitute	8
Diploma	158	6 to 10 years	105				
Degree	251	11 to 15 years	115	National Type (Tamil)	40	Trainee	10
Others	5	16 to 20 years	52	Special education	21		
		More than 20 years	97				

Table 6.7 shows the education level and race of in service teachers that participated in this study. From a simple comparison of race and education level, it shows that the majority of Malay teachers have degree qualification (n = 225, 89%). The ratio of different races of teachers is predominantly varied and thus, it is expected that the percentages of the education level among different races might be varied too.

Table 6.9: Education level and race of in service teachers

		Education level					
		SPM	STPM	College diploma	Degree	Others	Total
Race	Malay	115	54	103	225	2	499
	Chinese	13	8	18	14	2	55
	Indian	16	6	33	10	1	66
	Others	5	1	4	2	0	12
Total		**149**	**69**	**158**	**251**	**5**	**632**

[142] In some institutes of teacher education or universities, the pre service teachers have to undergo the teaching practicum twice. Due to the difference of practices among institutes of teacher education or universities, it could be hard to ascertain if the trainee teachers who participated in this study have finished their taught courses or in their second year of study. However, since I distributed the survey myself, I have an opportunity to ask them about their status and thus, all 10 of the trainee teachers have finished their taught course and thus, they are considered as in service teachers too.

6.7 Descriptive analysis

This section comprises descriptive analysis for all participants under three headings: subject taken, sources of information and perceived conceptions of gifted and talented.

6.7.1 Subject taken

Table 6.11 shows that majority of the pre service teachers have taken subject that contains information about gifted and talented (72.5%) as compared to in service teachers in which only small number of teachers have taken any subject that contain information about gifted and talented (1%). In the questionnaire, the participants were asked to state subjects that they have taken or are taking in university or institute of teacher education contain information about gifted and talented. The subjects that they stated are: Introduction to Special Education, Introduction to Learning Disabilities, and Introduction to Child Development. All of them were pre service teachers who were undertaking undergraduate program in special education. A list of subjects that are offered in various universities and institutes of teacher education are presented in **Appendix 25** for reference.

Table 6.10: Subject taken

	Subject taken		TOTAL
	Yes	No	
Pre service (n = 546)			
Female	265	110	375
Male	131	40	171
In service (n = 632)			
Female	7	449	456
Male	2	173	175
TOTAL	**405**	**772**	**1178**

Table 6.13 shows that eight in service teachers has tertiary education (seven have a degree qualification and only one has a college diploma). Even though a teacher with SPM qualification stated that he/she has taken a subject while in secondary school, yet this response is omitted from the analysis since there is no specific subject taught about gifted and talented in secondary school. In this vein, such response is considered as invalid claim and thus would be dismissed. Looking at the statistic of in service teachers who have taken any subject while in teaching training and their education level, it was found that only those

who have received tertiary education have learned about gifted and talented based on certain courses that they have taken. In the questionnaire, the participants were asked to state subjects that they have taken in university or teacher Education College that contain information about gifted and talented. The subjects stated are: Introduction to Child Development and Introduction to Special Education. A simple comparison with the subjects stated by the pre service and in service teachers shown that there are similar subjects that stated by participants in both groups.

Table 6.11: Subject taken and education level of in service teachers

	Education Level					
	SPM	**STPM**	**College Diploma**	**Degree**	**Others**	**Total**
Subject taken						
Yes	1*	0	1	7	0	9
No	148	69	157	244	5	623
TOTAL	**149**	**69**	**158**	**251**	**5**	**632**

*It is assumed that the participant gave inaccurate claim about subject that he/she has taken

6.7.2 Sources of information

Table 6.14 shows that the majority of pre service and in service teachers stated that media as the main source of information for gifted and talented. The media such as television, radio, newspaper and the internet are considered as popular medium in getting fast and instant information. According to Flanagin and Metzger (2001) internet serve similar functions like any traditional media such as newspaper in which it is used for '*information retrieval and information giving*' (p. 153). Even though the authority and authenticity of such sources such as website with no authors could easily be refuted but it is a common practice to look for information from the internet. However, the credibility of information from the media is never free from any refutation. In a study by Kiousis (2001) on three media channels which are newspaper, television and online news, it was found that people rate newspaper as having the highest credibility as compared to television and online news even though they still have scepticism toward all three channels. In other study by Johnson and Kaye (1998) it was found that people judged online media as somewhat similar with traditional media such as newspaper.

In this study, it can be considered that pre service and in service teachers tended to rely on information from the media to know more about gifted and talented as compared to other sources such as books (64.8%). Perhaps they assumed that any information from the media is credibly sufficient to provide them with relevant information about gifted and talented. However, this study does not aim to search about the media credibility in providing accurate information about gifted and talented. Thus, it is unknown how the pre service and in service teachers perceive the credibility of information from media.

Table 6.12: Sources of information

Sources of information	Pre service	In service	Total
Media	452 (82.7%)	493 (78%)	945 (80%)
Books	354 (64.8%)	310 (49%)	664 (56.3%)
Academic journals	72 (13%)	29 (4.5%)	101 (8.5%)
Friend/family member (who have gifted child)	9 (1.6%)	5 (0.7%)	14 (1.1%)
Newsletter	11 (2%)	7 (1.1%)	18 (1.5%)
Training	17 (3.1%)	5 (0.7%)	22 (1.8%)
Workshops/seminars	0	0	0
Others	Self-experience (2) (0.3%)	Teaching experience (4) (0.63%)	5 (0.5%)

6.8 Perceived conceptions of giftedness and talent: A descriptive analysis

To get a general overview of pre service and in service teachers' understanding on the conception of giftedness and talent, 60 different measures of conception of giftedness and talent were identified and incorporated into structured questionnaire. As such, each item measured different aspects of gifted and talented. The aspects are divided into two: general and specific. All of the items were measured on a five-point Likert scale (from 1 = strongly disagree to 5 = strongly agree). Discussion on descriptive statistics of the two aspects would be divided into two parts: **Part I** and **Part II**. A summary of the items is presented in **Table 6.15**.

Table 6.13: Summary of item specification

Construct	Specification	Statement
Part I - General	a. Definitions	Statement 1-6
	b. Values	Statement 7-9
	c. Perceptions	Statement 10-17
Part II - Specific	a. Internal	
	Cognitive	Statement 18-28
	Affective	Statement 29-37
	Behavioural	Statement 38-41
	Biological	Statement 42-44
	b. External	
	Programs	Statement 45-50
	Assessments	Statement 51-56
	Significant others	Statement 57-60

Part I comprises of three subdivisions: definitions, values and general perceptions of giftedness (see **Table 6.16** for details). The first subdivision (definitions) includes general definition of what is giftedness, who are considered to be gifted and talented, who are considered to be experts in gifted education field as well as general notions of labelling and classification of giftedness. The statements that fall under this division are **Statement 1** to **Statement 6**. The second division (values) encompasses general notions of hereditary for gifted and talented. **Statement 7** to **Statement 9** relate to this general notions of giftedness. The last division (perceptions) deals with general social and cultural values on giftedness. There are 8 statements constructed (**Statement 10** to **Statement 17**) to measure participants' perceptions on social and cultural values. In this subdivision, there is only one negative statement which is **Statement 17** and thus, reverse coding was applied prior to analysis.

Table 6.14: Pre service and in service general conceptions of gifted and talented (Part I)

Statements	Disagree (%)		Not Sure (%)		Agree (%)		Mean		SD	
	PS	IS	PS	IS	PS	IS	PS	IS	PS	IS
1. Gifted individuals and talented individuals are similar in their characteristics	51.1	54.9	6.6	6.2	42.2	39.0	3.16	3.12	1.014	1.026
2. Giftedness is a label given by a group of experts	25.3	26.1	4.0	3.2	70.7	70.7	3.81	3.83	.976	.896

	to label students with exceptional ability										
3.	Gifted students can be classified as mildly, moderately and highly gifted	39.2	40.5	8.4	6.3	52.2	53.0	3.39	3.43	1.087	.989
4.	Being gifted means the gifts or talents possess by a gifted individual is recognised, accepted and valued by society and culture where he or she belongs	26.9	28.3	4.0	2.2	69.0	69.8	3.71	3.80	.945	.838
5.	Experts in gifted education refers to individuals with distinct contribution in gifted education field	31.1	33.5	5.9	3.5	63.0	63.0	3.61	3.70	1.006	.924
6.	Labelling is essential in identifying gifted students	34.7	36.9	6.2	3.6	58.6	59.5	3.54	3.58	1.048	.954
7.	Giftedness is hereditary	65.9	68.0	10.6	9.3	23.4	22.7	2.73	2.81	1.027	.975
8.	Gifted students tend to have equally bright parents	68.5	69.0	11.2	7.6	20.3	23.3	2.65	2.85	.999	.973
9.	Gifted males are predominant in mathematics and science while gifted females are predominant in arts	52.1	61.0	15.9	8.7	31.5	30.2	2.84	3.02	1.162	1.033
10.	Gifted individuals have IQ test scores more than 140	22.5	29.4	17.4	13.8	59.6	56.6	3.35	3.37	1.294	1.147
11.	Gifted individuals are cognitively, emotionally and socially well-balanced	50.2	49.0	8.4	4.4	41.3	46.5	3.19	3.36	1.084	.971
12.	Gifted	66.1	70.7	10.6	8.9	23.1	20.4	2.77	2.78	1.024	.950

individuals could be academic underachievers										
13. Familial social economic status (SES) predicts adulthood achievement of gifted individuals	56.6	61.7	11.7	6.2	31.5	31.9	2.94	3.04	1.084	.947
14. Gifts and talents are given by God	14.1	21.8	3.1	3.0	82.4	75.1	4.26	4.09	1.007	1.021
15. Gifts are innate while talents are developed	31.1	35.4	4.8	3.8	63.4	60.8	3.69	3.66	1.105	1.026
16. Giftedness is defined based on social-contextual factors such as religious belief and moral values	48.9	44.6	13.0	8.5	37.9	46.8	3.06	3.26	1.137	1.029
17. Gifted students have difficulties in choosing career	60.2	62.0	12.6	12.8	26.9	25.1	2.86	2.83	1.061	1.026

Note: a) 1 = strongly disagree; 5 = strongly agree
b) PS = pre service teachers; IS = in service teachers
c) SD = standard deviation

Table 6.16 shows that there were mixed responses obtained from pre service and in service teachers for **Statement 1**: "*Gifted individuals and talented individuals are similar in their characteristics"*. Approximately 51% of pre service teachers and 55% in service teachers disagreed with the statement. There is little difference (about 3%) in terms of their agreement of the statement in which roughly 42% of pre service teachers and 39% of in service teacher agreed with the statement. About 5-6% from each group stated unsure about the similarities between gifted and talented individuals. The means and standard deviations from both groups are nearly similar (PS *Mean* = 3.16, IS *Mean* = 3.12; PS *SD* = 1.014, IS *SD* = 1.026). This result indicates that pre service and in service teachers might have some ideas about characteristics of gifted and talented individuals but they are uncertain about similarities or differences between both groups.

Statement 2 examines participants' understanding of giftedness in terms of the roles experts play in labelling individuals as gifted and talented. **Statement 2** states that: *"Giftedness is a label given by a group of experts to label students with exceptional ability".* Majority of pre service teachers (both approximately 71%) agreed that experts play significant role in labelling individuals with exceptional abilities. Less than 30% (25% of pre service and 26% of in service teachers) disagreed and small percentage of both groups stated unsure about the roles of experts in labelling gifted and talented individuals. With means of 3.81 (for PS) and 3.83 (for IS) and standard deviations of .976 (for PS) and .896 (for IS), it shows that participants have general consensus that experts play significant roles in labelling individuals with exceptional abilities.

To investigate whether there participants perceive different classifications of gifted students according to various levels of giftedness such as mild, moderate or high, **Statement 3** was posed to measure participants' perception on that aspect. **Statement 3** states: *"Gifted students can be classified as mildly, moderately and highly gifted"*. Table 12 indicates that approximately half of pre service and in service teachers (52% of pre service and 53% or in service teachers) perceived that there are different levels of giftedness. Less than 10% from both groups stated that they were unsure about the classifications. In literature, researchers such as Keating and Stanley (1972) and Swiatek and Benbow (1991) categorised gifted and talented students into several classifications: mildly, moderately or highly gifted. Even though the descriptions of each classification could be refuted by some experts in gifted education yet its application in education setting might have certain impact on those students especially when it comes to assigning appropriate educational provisions for them.

In addition, **Table 6.16** also shows nearly 70% of pre service and in service teachers (PS = 69%; IS = 69.8%) agreed that giftedness is socially and culturally defined. **Statement 4** that: *"Being gifted means the gifts or talents possess by a gifted individual is recognised, accepted and valued by society and culture where he or she belongs".* The means of both groups are almost similar. The mean of pre service teachers is 3.71 and the mean of in service teachers is 3.80. The standard deviations are also approximately similar with .945 for pre service group and .838 for in service group. Small numbers of pre service and in service teachers are unsure about the social and cultural influence on the definition of giftedness (only less than 5% of them stated not sure). In general, it is assumed that to some extent participants

acknowledge the fact that social value influence how giftedness is defined in a particular society.

Statement 5 states that "Experts in gifted education refers to individuals with distinct contribution in gifted education field". Majority of pre service and in service teachers agreed with the statement (63% for both groups). The mean score for **Statement 5** is 3.61 for pre service teachers and 3.70 for in service teachers, and the standard deviation is 1.048 for pre service teachers and .924 for in service teachers. Approximately 33% from both groups disagreed with a characteristic of individuals considered as experts in gifted education which is distinct contributions in the field. However, according to Pfeiffer (2003) there is a lack of consensus among researchers in gifted education on how to conceptualise the definitions of 'expert' in gifted education. Therefore, there is an arising question of who are the experts and their roles in gifted education.

Table 6.16 also shows that more than half of pre service (59%) and in service teachers (60%) agreed on the importance of labelling in identifying gifted students. **Statement 6** states that: "Labelling is essential in identifying gifted students". From the table it can be concluded that there is a general consensus on the significant of labelling on identification process. This conclusion was made based on the result in **Table 6.16** showing the means of 3.54 (pre service teachers) and 3.58 (in service teachers) and standard deviation of 1.048 (pre service teachers) and .954 (in service teachers). The means and standard deviations from both groups are nearly similar and have small difference. From this finding it shows that majority participants perceive labelling as desirable in identifying gifted students. To confirm this perception by participants, this issue is explored in detail qualitatively too.

Next, **Statement 7, 8** and **9** explore the perceptions of participants on the nature aspects of giftedness which is hereditary, parents' genetic makeup, and gender differences. Specifically, to investigate whether there is a consistency in responses, **Statement 7** and **Statement 8** were posed to examine the true perception of participants on the influence of hereditary on giftedness. **Statement 7** states the link of hereditary on giftedness in general, and **Statement 8** states the link of hereditary on giftedness in specific in which it relates to genetic predisposition from parents. **Statement 7** states that: *"Giftedness is hereditary".* Majority of participants seemed to disagree with this statement. More than 65% from both

groups disagreed. Majority of participants disagreed with **Statement 8** that states: *"Gifted students tend to have equally bright parents".* From **Table 6.16**, a simple comparison of means from both statements shows that participants disagreed with the notion of hereditability of extraordinary skills or abilities. The means of **Statement 7** are 2.73 (pre service teachers) and 2.81 (in service teachers) and the means of **Statement 8** are 2.65 (pre service teachers) and 2.85 (in service teachers). Looking at the low standard deviations from both groups, it can be considered that it is adequate to conclude that there is little dispersion from their responses.

Statement 9 relates to participants' notion of gender predominance in certain domain of giftedness. The notion of gender predominance is resulted from social processes such as socialisation and assimilation. It states that**: *"Gifted males are predominant in mathematics and science while gifted females are predominant in arts"*.** Even though majority of participants disagreed on this notion (52% of pre service and 61% of in service teachers), yet some of them especially pre service teachers stated unsure (16%). Even though this study does not explore further justification for that, yet their uncertainty can be interpreted in certain ways. It is unknown whether their uncertainties are due to limited information about the differences in terms of field specialisation, or tendency to withhold their bias perception.

To investigate participants' notions of giftedness in relation to intelligence, **Statement 10** was posed that states: *"Gifted individuals have IQ test scores more than 140".* More than half participants from both groups agreed on this (60% of pre service and 57% of in service teachers). Even though half of them agreed on the notion of having high IQ with giftedness yet there were mixed responses of disagree and not sure. Less than 31% of participants disagreed (23% of pre service and 30% of in service teachers) and approximately near 20% of them not sure about the relation between high IQ and giftedness. The means of both groups (PS *Mean* = 3.35, IS *Mean* = 3.37) show that participants in general are unsure about the relation of intelligence with giftedness.

Statement 11 was posed to explore participants' perception on gifted individuals based on three aspects: cognitive, emotion and social (personality). The responses from participants are varied in which the percentages of agreement and disagreement are quite similar.

Approximately 50% participants disagreed whereas more than 41% participants agreed on the statement: *"Gifted individuals are cognitively, emotionally and socially well-balanced".* About 8% pre service teachers stated unsure about this notion of 'all-rounded' gifted individuals as compared to only 4% in service teachers. Looking at the means (PS = 3.19; IS = 3.36) and standard deviations of both groups (PS = 1.084, IS = .971) show that in general participants responses are varied.

Also, Table 12 shows high percentage of disagreement by participants on **Statement 12**: *"Gifted individuals could be academic underachievers".* More than 65% of pre service and in service teachers (71%) disagreed and this shows that they perceived gifted individuals are usually high achievers. Less than 25% of them agreed with the statement. The mean scores (PS = 2.77, IS = 2.78) from both groups show the consistency of disagreement of participant on the statement. This notion shows that participants equate being gifted as being academically high achievers. To certain extent, this would be the case. However, it is worth to note that it is also possible for a gifted individual to have psychological disorder such as autism or learning difficulties such as dyslexia (Reis and McCoach, 2000; Reis and McCoach, 2002).

In addition, **Statement 13** was posed to explore participants' perception on the importance of SES on achievement in adulthood. When it comes to social economic status (SES) of gifted individual family, majority of participants (57% of pre service and 62% of in service teachers) disagreed that SES influences achievement of gifted individuals in later years. Only a small percentage of participants agreed (approximately 31% of each groups) while minority of participants seemed to be unsure (approximately around 11% of pre service and 6% of in service teachers). Looking at the descriptive findings for item 13 (which is represented in **Statement 13** respectively), it could be summarised that more than half of the teachers disagree that family background relates to the state of being gifted and talented.

Statement 14 states that: *"Gifts and talents are given by God".* Most of the participants agreed (82% of pre service and 75% of in service teachers) that with the notions of God given gifts or talents. Table 12 indicates that the means from both groups are high with mean of 4.26 for pre service and 4.09 for in service teachers. There is small difference between

standard deviation of pre service (1.007) and in service teachers (1.021) and thus, it could be generally concluded that there is consensus by participants in this statement.

Statement 13 and **14** explore the underlying assumption on chance factor. To be born into a family with affluent social status as well as having parents who might contribute good genes might be considered as chance factors. Based on a proposition by Gagne (2010), chance plays invisible roles in the development of gifts and talents. From the descriptive findings on both statements, it seems that teachers have a mixed view on this issue i.e. how chance factor influences gifted and talented individuals. To explore further on this, qualitative findings might uncover how teachers perceive on the issue of nature and nurture.

To examine participants' notion of nature and nurture on giftedness, **Statement 15** was posed that states: *"Gifts are innate while talents are developed".* Majority of participants (63% or pre service and 60% of in service teachers) agreed on this statement and approximately about 30-35% of participants disagreed on this. The responses of small number of participants that stated unsure can be interpreted in two ways: they could be seemed to be unsure about the differences between gifts and talents or they could be seemed as indifferent about the notion of nature and nurture. To understand more about their notions of nature and nurture, a question was asked in interview later on.

Statement 16 states that: *"Giftedness is defined based on social-contextual factors such as religious belief and moral values".* This statement was similar with **Statement 4**: *"Being gifted means the gifts or talents possess by a gifted individual is recognised, accepted and valued by society and culture where he or she belongs".* However, **Table 6.1.6** shows that the responses of participants were different based on comparison of percentages of disagreement and agreement. In **Statement 16**, less than 50% of participants agreed that giftedness is socially constructed with 38% of pre service and 47% of in service teachers stated their agreement on this statement. As compared to **Statement 4**, the percentages of participants stated unsure are also higher with 13% of pre service and 9% of in service teachers stated not sure in **Statement 16** as compared to 4% of pre service and 2% of in service teachers in **Statement 4.**

In addition, **Statement 17** examines participants' perception on the difficulty of choosing career for gifted individuals. **Statement 17** states that: *"Gifted students have difficulties in choosing career".* Majority of participants disagreed with this statement with 60% of pre service and 62% of in service teachers stated their disagreement. The difference between participants who agreed and unsure was small based on the percentages (approximately about 12%). The means are quite low with 2.86 for pre service and 2.83 for in service teachers and thus, it can be generally concluded that the results are similar with the percentages of participants who stated their disagreement. In summary, based on teachers' responses, it seems that teachers perceive that gifted and talented students are less difficult in finding career. This assumption by teachers does not reflect findings from other studies which found that gifted and talented students are also having similar difficulties in choosing career like normal students (Larsson, 1986; Wu, 2005; Worrell, 2007).

Part II is divided into two main divisions: internal and external (see **Table 6.17** for details). Internal division involves internally related aspects of gifted and talented individuals which are: cognitive, affective, behavioural, and biological whereas external division involves external aspects such as programs for gifted and talented students, assessments involve in identifying them and also significant others. Reverse coding was applied prior to analysis for **Statement 46.**

Table 6.15: Pre service and in service specific conceptions of gifted and talented (Part II)

Statements	Disagree (%)		Not Sure (%)		Agree (%)		Mean (%)		SD (%)	
	PS	IS	PS	IS	PS	IS	PS	IS	PS	IS
18. Gifted individuals have balance superiority in verbal and mathematics efficacy	43.4	41.0	10.3	7.0	46.2	52.0	3.28	3.38	1.155	1.027
19. Gifted individuals must be able to demonstrate their abilities	29.2	29.0	5.3	6.8	64.3	63.8	3.69	3.62	1.025	1.029
20. Gifted individuals have excellent abilities	22.1	26.9	4.0	3.3	73.8	69.8	3.86	3.79	.942	.900
21. Gifted individuals have one or more exceptional abilities	25.1	29.2	7.3	4.1	67.4	66.7	3.67	3.7	1.075	.893
22. Above average ability is one of the characteristics of giftedness	23.0	26.5	6.6	5.5	70.3	68.0	3.73	3.69	1.030	.984

23. Gifted individuals are creative	31.0	36.4	10.6	4.7	58.4	58.9	3.47	3.54	1.157	.984
24. Gifted individuals are endowed with innate untrained abilities	22.5	30.2	4.4	4.0	73.1	65.8	3.85	3.78	.970	.931
25. Talented individuals have outstanding mastery of systematically developed abilities	23.6	26.7	6.0	3.0	70.2	70.1	.378	3.74	1.014	.843
26. Gifted individuals have extraordinary speed of information processing	21.0	24.7	5.9	5.2	73.1	70.1	3.84	3.62	1.029	.977
27. Gifted individuals have excellent memory	21.9	21.4	8.8	3.0	69.3	75.7	3.76	.352	1.129	1.005
28. Gifted students have the ability to balance between skills and tasks given	30.9	29.0	11.7	4.0	57.3	67.1	3.42	3.67	1.165	.932
29. Gifted individuals are analytical	25.3	29.6	13.7	8.7	60.8	61.6	3.45	3.67	1.200	.897
30. Gifted individuals are critical	24.9	29.8	12.8	6.2	62.2	64.1	3.49	3.75	1.186	.934
31. Gifted individuals are practical	33.0	33.5	13.9	7.6	53.1	58.9	3.31	3.52	1.18	1.005
32. Gifted students have high perceptions of their own academic competency	27.1	31.3	7.9	4.7	64.9	63.9	3.61	3.67	1.092	.932
33. Gifted students have superior academic motivation	34.1	33.2	7.7	3.3	58.3	63.5	3.51	3.75	1.096	.897
34. Gifted individuals have high self-confidence	33.6	26.2	9.5	4.0	56.9	69.8	3.50	3.26	1.161	.934
35. Gifted individuals are perfectionist	38.1	44.6	18.3	10.4	43.1	44.8	3.09	3.56	1.243	1.052
36. Precociousness at early age does predict above average ability	32.4	36.5	11.7	4.7	55.9	58.7	3.38	3.56	1.130	.930
37. Vulnerability is one of the characteristics of gifted students	50.4	51.7	8.4	7.6	41.2	40.7	3.19	3.23	1.060	1.006
38. Gifted individuals exhibit peculiar behaviours	42.7	52.9	8.6	4.3	48.7	42.8	3.34	3.30	1.119	.911
39. Gifted individuals are persevered in task completion	37.0	40.4	11.9	4.9	51.1	54.8	3.32	3.47	1.176	.952
40. Gifted individuals use social comparison strategies to enhance self-efficacy when they thought that they have performed poorly academically	32.2	33.7	16.1	8.7	51.5	57.6	3.24	3.44	1.226	1.004
41. Social adjustability is	27.5	30.4	11.	5.1	61.4	64.5	3.51	3.63	1.147	.922

one of the characteristics essential in ensuring later achievement in adulthood for gifted individuals										
42. Gifted individuals has higher brain activation as compared to non-gifted individuals	24.0	21.3	7.9	4.4	68.1	74.2	3.71	3.84	1.120	.935
43. Gifted students have bigger brains	50.7	57.4	26.6	18.5	22.7	23.8	3.25	2.74	1.237	1.110
44. Gifted students have heavier brains	52.5	57.7	27.8	21.7	19.6	20.5	2.43	2.60	1.181	1.090
45. Experts identification of gifted students is highly reliable and valid	40.0	38.3	11.0	8.2	49.1	53.5	3.28	3.40	1.137	1.041
46. There is no age limit to identify gifted individuals	26.4	30.6	8.1	4.9	65.6	64.5	3.65	3.64	1.094	.926
47. Assessment at early age could provide psychological information about gifted students	24.1	29.1	8.2	5.5	67.45	65.3	3.66	3.63	1.071	.928
48. Criterion-performance based assessments such as National Examination can identify gifted students	35.9	45.2	5.7	4.3	58.4	50.4	3.51	3.43	1.053	.961
49. IQ tests are better predictor in identifying gifted students	21.6	25.6	5.9	2.5	72.5	71.8	3.82	3.83	1.046	.870
50. Media attention helps in identifying gifted children	39.2	48.8	8.4	4.6	52.4	46.7	3.39	3.39	1.117	.960
51. Deliberate efforts and training for gifted students help to sustain and enhance their gifts	19.4	23.4	3.5	2.1	77.1	74.3	3.97	3.90	.966	.819
52. The result of educational interventions may vary for different gifted students	17.4	25.6	8.1	4.9	74.6	69.5	3.79	3.75	1.103	.946
53. Enrichment programme is better than acceleration programme as students do not have to skip grades	29.5	34.5	13.0	4.3	57.5	61.2	3.45	3.66	1.233	.953
54. Acceleration programme gives mixed benefits to	27.1	26.9	10.1	5.4	62.8	67.7	3.55	3.71	1.136	.936

various gifted students										
55. Gifted individuals can flourish and reach the level of eminence with limited training and environmental stimulation	34.1	41.1	9.9	4.6	56.0	54.1	3.40	3.48	1.144	.976
56. Flexible curriculum should be implemented to suit with the needs of gifted students	18.0	24.9	4.9	1.3	77.2	73.9	3.97	3.93	1.033	.811
57. Parental education background is correlated with intellectual skills of gifted students	35.2	40.0	7.7	2.8	57.1	57.1	3.45	3.56	1.119	.925
58. Parenting style is linked with the development and achievement of gifted students in a long term run	24.7	29.0	8.2	3.6	67.0	67.4	3.66	3.71	1.091	.910
59. Teachers might have different education-related values from the parents of gifted students	21.6	31.2	12.6	4.9	65.7	63.8	3.50	3.63	1.186	.894
60. Mentorship has positive significant impact on gifted adolescents	21.8	25.8	10.4	2.8	67.8	71.3	3.61	3.80	1.149	.835

Note: a) 1 = strongly disagree; 5 = strongly agree
b) PS = pre service teachers; IS = in service teachers
c) SD = Standard deviation

Table 6.17 shows mixed responses from participants for **Statement 18** that states: *"Gifted individuals have balance superiority in verbal and mathematics efficacy"*. Comparing the percentages of participants who disagreed (approximately 42% of both groups) and agreed (49% of both groups) on **Statement 18** indicates that the percentages of participants who stated their agreement are slightly higher as compared to participants who stated their disagreement.

To examine participants' perception on the abilities of gifted individuals, **Statement 19**, **20**, **21** and **22** were posed. **Statement 19** was incorporated to explore participants' perception

on demonstrability[143] of gifted individuals. **Statement 19** states that: *"Gifted individuals must be able to demonstrate their abilities".* Majority of participants agreed (64% of both groups) with this statement. Only small percentage of participants disagreed (29% of both groups) and minority of participants uncertain about this statement. Table 13 shows that similar percentages of participants who agreed on **Statement 20, 21** and **22**. **Statement 20** explores participants' perception on excellent abilities that gifted individuals have. The statement states that: *"Gifted individuals have excellent abilities".* The means of both groups are also high with 3.86 (pre service teachers) and 3.79 (in service teachers). This is confirmed by the fact that the majority of participants (74% of pre service and 70% of in service teachers) agreed with the statement. **Table 6.17** shows that for **Statement 21,** 74% participants from both groups agreed on the statement which is: *"Gifted individuals have one or more exceptional abilities".* Less than 30% of participants disagreed and with high means and low standard deviations, it could be generally concluded that participants perceived that gifted individuals would have at least an exceptional ability. **Statement 22** states that: *"Above average ability[144] is one of the characteristics of giftedness".* The percentages of participants that agreed on the statement are 70% (pre service teachers) and 68% (in service teachers). With means of 3.73 for pre service teachers and 3.69 for in service teachers, it is confirmed that participants agreed on this statement. **Table 6.17** shows that **Statement 20** and **22** has similar response from participants. Both show high percentages of agreement and low percentages of disagreement. This shows that in general, participants agreed that gifted individuals are individuals who are able to perform exceptionally and their abilities are above average in comparison to age group.

Next**, Statement 23** states that: *"Gifted individuals are creative".* More than half participants agreed on this statement (58% of pre service and 59% of in service teachers) and there is little difference between two groups of participants. The percentages of both groups that disagreed with this statement are almost similar (31% of pre service and 36% of in service teachers). Looking at the means of both groups confirmed the assumption that there is little difference participants from both groups in terms of their agreement and disagreement of this statement.

[143] Demonstrability is a term used to indicate the ability to demonstrate gifts or talents outstandingly. The term was coined by Sternberg and Zhang (1995) in their theory known as 'A pentagonal implicit theory'. See more on Sternberg and Zhang (1995) and Zhang and Sternberg (1998).

[144] Above average ability is a term coined by Joseph S. Renzulli (Renzulli, 1978). He proposed that there are three elements of giftedness: above average abilities, task commitment and creativity. For details, see Renzulli (1978).

Statement 24 is similar with **Statement 7** (*"Giftedness is hereditary"*) in which both explore participants' perceptions on biological aspects of giftedness. **Statement 24** states that: *"Gifted individuals are endowed with innate untrained abilities".* Even though both statements explore similar aspect, yet majority of participants agreed on **Statement 24** with 73% of pre service teacher and 66% of in service teachers stated their agreement. Minority of participants stated unsure (with 4% of both groups). A simple comparison between **Statement 7** and **Statement 24** shows that majority participants agreed even though giftedness is not inherited yet it is innate.

To test participants' perception on talented individuals, **Statement 25** was posed in which it states: *"Talented individuals have outstanding mastery of systematically developed abilities".* Majority of participants from both groups agreed on this statement (70% of both groups). Small percentage of participants stated unsure (6% of pre service and 3% of in service teachers). In this vein, it seems that teachers perceive that talent is developed systematically as compared to having innate potential that might lead extraordinary abilities as stated in the previous statement (**Statement 24**).

Statement 26 explores specifically a cognitive aspect. **Statement 26** states that: *"Gifted individuals have extraordinary speed of information processing".* More than 70% participants from both groups agreed with this statement. About 20% of them disagreed and less than 10% stated unsure. It can be concluded that perhaps this cognitive characteristic is very specific and thus, perhaps not many of participants are aware of it or even if they are aware of it, they agreed because they might think that it is logical for the gifted individuals to have extraordinary ability to process information more rapid than normal individuals.

There was mixed response of participants from both groups. Majority of in service teachers (76%) agreed with **Statement 27** that states: *"Gifted individuals have excellent memory"* whereas less than 70% of pre service teachers agreed with the statement. Even though the difference is small, yet it shows that different percentages of pre service and in service teachers in terms of their perception on the memory of gifted individuals.

Statement 28 states that: *"Gifted students have the ability to balance between skills and tasks given".* There was slight difference (only 10%) between the pre service (57%) and in service teachers (67%) in terms of their agreement with the statement. The percentages of participants who disagreed from both groups were almost similar with 31% of pre service and 29% of in service teachers disagreed. However, pre service teachers who stated unsure where much higher as compared to in service teachers.

To explore the affective aspects of gifted individuals, nine statements were posed. **Statement 29, 30** and **31** were developed and posed based on a theory proposed by Sternberg (1985)[145]. More than half of participants agreed on all three statements. In **Statement 29** (*"Gifted individuals are analytical"*), 61% of pre service and 62% of in service teachers agreed, in **Statement 30** (*"Gifted individuals are critical"*) 62% of pre service and 64% of in service teachers agreed and in **Statement 31** (*"Gifted individuals are practical"*) 53% of pre service and 59% of in service teachers agreed with the respective statement. The percentages of participants who disagreed with all three statements were almost similar too. However, the percentages of pre service teachers stated unsure were higher than the in service teachers in which in all three statements, the percentages were more than 10%.

The next affective characteristic of gifted individuals was incorporated into **Statement 32** is the perception of gifted individuals on their academic competency. More than 60% participants agreed with **Statement 32** that states: *"Gifted students have high perceptions of their own academic competency*". This is consistent with the means which are 3.61(pre service teachers) and 3.67 (in service teachers). To explore participants' perceptions on the motivation and self-confidence of gifted students, **Statement 33** and **34** were posed. **Table 6.17** shows that 58% of pre service and 64% of in service teachers agreed with **Statement 33** that states: *"Gifted students have superior academic motivation"*.

Next, **Statement 34** states that: *"Gifted individuals have high self-confidence".* There was a slightly different percentage between pre service and in service teachers. It was found that 70% of in service teachers agreed whereas only 57% of pre service teachers agreed with the

[145] Sternberg (1985) highlights three attributes that constitute giftedness: analytical, critical and practical. He further postulated that even though there is no evidence to show that individuals with two attributes of giftedness would be more or less successful than those with one or all three, yet to be identified as gifted, individuals need to demonstrate either one or combination or all three attributes. For more details, see Sternberg (1985).

statement. There was 34% of pre service teachers and 26% of in service teachers disagreed with the statement. There was 5% of difference between pre service and in service teachers who stated unsure.

Statement 35 was posed to examine participants' perception on another characteristic of gifted individuals which is perfectionism. Based on various studies, it was found that perfectionism is regarded as one of the characteristics of giftedness (Hewitt and Flett, 1991; Pyryt, 1994; Parker and Adkins, 1995; Dixon et al., 2004; Speirs Neumeister, 2004b; Speirs Neumeister, 2004a; Hoekman et al., 2005; Speirs Neumeister and Finch, 2006; Chan, 2009; Maksić and Iwasaki, 2009). This statement is developed by adapting findings from such studies. In this study, it was found that not many participants agreed on this statement. The percentages of pre service and in service teachers who agreed with this statement are quite similar (43% of pre service and 45% of in service teachers). However, there was small difference between pre service teachers (38%) and in service teachers (47%) in terms of the percentages who disagreed with **Statement 35**. The standard deviations of both groups were slightly higher than the rest of statements (with 1.243 for pre service and 1.052 for in service teachers).

Other affective characteristics of gifted individuals that were included in the questionnaire are precociousness and vulnerability. **Statement 36** states that: *"Precociousness at early age does predict above average ability".* **Statement 37** states that: *"Vulnerability is one of the characteristics of gifted students".* A brief comparison of percentages of both statements show that participants agreed with **Statement 36** are higher than participants agreed with **Statement 37** with more than 55% of participants agreed for **Statement 36** and less than 45% of participants agreed with **Statement 37**. However, participants who disagreed are higher in **Statement 36** (50% of pre service and 52% of in service teachers) as compared to **Statement 36** (32% of pre service and 37% of in service teachers).

Four statements were posed to examine participants' perceptions on the behavioural aspect of gifted individuals: peculiarity of behaviours, perseverance, social comparison strategies and social adaptability. **Statement 38** explores participants' perception on peculiarity of behaviours that gifted individuals might show. **Table 6.17** shows that there is slight difference between pre service and in service teachers who agreed (49% of pre service and

43% of in service teachers) with the statement. A simple comparison between the percentages of participants who disagreed shows that there is small difference which is 10% between pre service and in service teachers (43% of pre service and 53% of in service teachers). With the relatively similar percentages of participants who agreed and disagreed with the statement, it can be generally concluded that participants have mixed perceptions on the aspect of peculiarity. Some participants perceived that gifted individuals exhibit peculiar behaviours whereas some perceive otherwise in which peculiar behaviours could not be considered as a characteristic of gifted individuals.

Statement 39 examines participants' perception on the perseverance of gifted individuals in completing task. Table shows that more than half of participants (51% of pre service and 55% of in service teachers) agreed with **Statement 39** that states: *"Gifted individuals are persevered in task completion".* The participants who disagreed are almost similar between pre service and in service teachers (37% of pre service and 40% of in service teachers). Pre service teachers who stated unsure are higher than in service teachers with 7% difference. The percentages between participants who agreed and disagreed are rather similar. Thus, it is hard to confirm participants' perception on this issue.

Statement 40 states that: *"Gifted individuals use social comparison strategies to enhance self-efficacy when they thought that they have performed poorly academically".* There were small differences among participants who agreed and disagreed. More than 50% of participants agreed with this statement (52% of pre service and 55% of in service teachers) whereas 32% of pre service and 34% of in service teachers disagreed. There was mixed responses from pre service and in service teachers in which 7% of pre service stated unsure more than in service teachers.

Statement 41 explores participants' perception on the social adaptability of gifted individuals for ensuring later life achievement. Majority of participants agreed with this statement (61% of pre service and 65% of in service teachers). There was small difference between pre service and in service teachers in which 28% of pre service and 30% of in service teacher disagreed with **Statement 41.**

Statement 42, **43** and **44** were posed to examine participants' perceptions on certain characteristics of the gifted individuals' brain such as size, weight and level of activation. Research findings from various research on brain size (Witelson et al., 2006), weight (Witelson et al., 1999), and activation (Diamond et al., 1985; Heilman et al., 2003; O'Boyle et al., 2005) are adapted to develop the three statements. **Statement 42** states that: *"Gifted individuals have higher brain activation as compared to non-gifted individuals".* Majority of participants (68% of pre service and 74% of in service teachers) agreed with this statement. The difference between pre service and in service teachers who disagreed was small (with 24% of pre service and 21% of in service teachers disagreed with the statement). **Statement 43** states that: *"Gifted students have bigger brain"*. More than 50% of participants disagreed with this statement. The percentages of participants who agreed and stated unsure were almost similar (with approximately 20% of participants stated their disagreement and uncertainty).

Statement 44 explores the participants' perception on the level of gifted individual brain weight. Approximately more than 50% of participants disagreed with this statement (53% of pre service and 58% of in service teachers). Approximately 28% of pre service and 22% of in service teachers stated unsure about the relation between brain weights with giftedness. In addition, the percentages between pre service and in service teachers who disagreed with this statement were nearly similar (28% of pre service and 22% of in service teachers). A simple comparison between findings for Statement 44 and 45 shows that many participants perceive that brain size and weight of gifted and talented individuals are different from normal population.

Statement 45 states that: *"Experts identification of gifted students is highly reliable and valid".* The percentages of pre service teachers who agreed and disagreed with this statement were almost similar (49% of pre service teachers agreed and 40% of in service teachers disagreed). For the in service teachers, the percentages of them who agreed and disagreed were slightly different - with 54% of in service teachers agreed and 38% of in service teachers disagreed with the statement.

Statement 46 examines the participants' perception on the age limit for identifying gifted students. More than 60% of participants agreed that there is no age limit in identifying

gifted students and approximately 30% disagreed and the rest stated unsure. This finding might imply that participants might acknowledge the practice of later identification in life. Practically, late identification might be considered too late for a gifted student to develop his or her talent. This is because talent development takes time and thus the earlier an educational provision is exposed to a gifted student, the better.

To examine participants' perception on the variety of assessment to identify gifted students, **Statement 47**, **48** and **49** were posed. **Statement 47** states that: *"Assessment at early age could provide psychological information about gifted individuals".* Approximately 67% of pre service and 65% of in service teachers agreed with this statement. The percentages of participants who disagreed were minimal with 24% of pre service and 29% of in service teachers disagreed with the statement.

Statement 48 was posed to explore participants' perceptions on criterion-performance based assessment in identifying gifted students. More than 50% participants from both groups agreed with **Statement 48**. The percentages of participants who disagreed were slightly different with 36% of per service and 45% of in service teachers disagreed.

In identification process, IQ tests are assumed to be better predictor. Majority of participants agreed (73% of pre service and 72% of in service teachers). **Statement 49** states that: *"IQ tests are better predictor in identifying gifted students"*. In this instance, it could be concluded that teachers perceive that IQ tests could be served as an indicator in identifying gifted and talented students.

Media plays role in drawing attention of masses on certain issues through various means. Table 13 shows that there was difference between pre service and in service teachers who disagreed (39% of pre service and 49% of in service teachers) with **Statement 50** that states: *"Media attention helps in identifying gifted students".* Even though media does not directly involve in the process of identifying gifted students yet its attention might make gifted individuals to become an object of attention.

Statement 51 states that: *"Deliberate efforts and training for gifted students help to sustain and enhance their gifts".* Approximately 77% of pre service and 74% of in service teachers

agreed with this statement. The percentages of participants who disagreed with this statement were small (19% of pre service and 23% of in service teachers). In this vein, in general teachers perceive that continuous efforts and training are important in developing talent.

Participants' perceptions on the effectiveness of various educational programs were explored in **Statement 52**, **53**, **54** and **55**. **Statement 52** states that: *"The result of educational interventions may vary for different gifted students"*. Most of participants agreed with the **Statement 52** with 75% of pre service and 70% of in service teachers. There was approximately 8% percentage of difference between pre service and in service teachers who disagreed with the statement.

To explore participants' perceptions on two different programs for gifted students: enrichment and acceleration programs, **Statement 53** was posed. **Statement 53** states that: *"Enrichment program is better than acceleration program as students do not have to skip grade"*. Approximately 58% of pre service agreed and 30% disagreed whereas 61% of in service teachers agreed and 35% disagreed with this statement. The percentages of participants that stated unsure were inconsistent in both groups in which pre service teachers who stated unsure was higher than the in service teachers.

Statement 52 and **Statement 54** were closely related. **Statement 52** was posed to examine participants' perception of program for gifted student in general whereas **Statement 54** was posed to examine participants' perception of program for gifted students in specific; acceleration program. More than 60% of participants (63% of pre service and 68% of in service teachers) agreed with this statement. Approximately 27% of both groups disagreed with **Statement 54.**

Statement 55 was posed to examine participants' perceptions on the effect of training and environmental stimulation on the level of eminence. **Table 6.17** shows that more than 50% of participants agreed with **Statement 55.** Approximately 34% of pre service and 41% of in service teachers disagreed with **Statement 55** that states: *"Gifted individuals can flourish and reach the level of eminence with limited training and/or environmental stimulation"*. Since Statement 55 is a negative statement, reverse coding was applied.

Statement 56 states that: *"Flexible curriculum should be implemented to suit with the needs of gifted students".* Most of participants agreed with 77% of pre service and 74% or in service teachers stated their agreement. Only a minority of participants stated unsure (5% of pre service and 1% of in service teachers).

Statement 57, **58**, **59** and **60** examine participants' perceptions on various aspects of significant others such as parental education (**Statement 57**), parenting style (**Statement 58**), different values hold by teachers and parents (**Statement 59**) and mentors' influence on gifted students (**Statement 60**). For **statement 57**, more than 50% of pre service and in service teachers agreed with the statement. **Statement 57** states that: "*Parental education background is correlated with intellectual skills of gifted students".* A small percentage of participants i.e. in service teachers stated unsure (2.8%).

To investigate participants' perception on the relation between parenting style and development and achievement of gifted students, **Statement 58** was posed. **Statement 58** states: "*Parenting style is linked with the development and achievement of gifted students in a long term run".* More than 65% of pre service and in service teachers agreed with the statement. This shows that participants to some extent perceive that parenting style can influence the development and achievement of gifted students.

Statement 59 states: "*Teachers might have different education-related values from the parents of gifted students*". Most of participants (65.7% of pre service and 63.8% of in service teachers) agreed with the statement. Only less than 30% of participants from both groups disagreed. This indicates that most participants aware that parents might hold different values on issues related to education.

For **statement 60** (*Mentorship has positive significant impact on gifted adolescents*), most participants from both groups (67.8% of pre service teachers and 71.3% of in service teachers) agreed that mentorship to some extent does has influence on gifted adolescents. The role of mentors in this instance is not denied. Only small number of participants from both groups stated unsure about the role of mentors. The statement is purposely made in generic manner to tap participants' perception on the role of mentors in general.

Summary of descriptive analysis

From the descriptive findings, it could be concluded that participants' conceptions of giftedness and talent are broad and general. The frequency tables show that participants agree in most of the statements developed for this study which are based on theories and research findings. Even though participants stated that they agree on most of the statements, yet it is unknown how they perceive the characteristics or attributes of gifted and talented individuals in comparison to any model and/or theory of giftedness as well as other research findings. This is because it was found that they perceive some of the characteristics of gifted and talented individuals differently from what have been found in previous research findings. For example, in studies by various researchers, it was found perfectionism is one of the characteristics of gifted individuals (Hewitt and Flett, 1991; Pyryt, 1994; Parker and Adkins, 1995; Dixon et al., 2004; Speirs Neumeister, 2004b; Speirs Neumeister, 2004a; Hoekman et al., 2005; Speirs Neumeister and Finch, 2006; Chan, 2009; Maksić and Iwasaki, 2009). However, small percentage of participants agree on this statement and thus, it is perceived that participants perceive that perfectionism is not a characteristic possess by gifted and talented individuals.

In addition, for the biological characteristic of giftedness such as hereditary, it was found that more than 50% participants perceive that giftedness is not hereditary and parents' genetic traits have little influenced on gifted attributes of their children. Even though there is no single study which has shown the exact genetic influence on giftedness, yet studies have shown that genetic as well as environment do influence on the cognitive development (DeFries et al., 1987; Bartels et al., 2002; Bouchard Jr. and McGue, 2002; Deary et al., 2006; Celec et al., 2009). In this study, it was also found that more than 50% participants perceive that parents' education background correlate with cognitive ability of gifted children as what has been found in previous studies (e.g. White and Renzulli, 1987; Mate, 2009).

6.9 Conclusion

In this chapter, a preliminary data analysis is presented. An overview of quantitative and qualitative analysis was presented at the beginning of this chapter. Also, participants' response rate from survey and interview was discussed in detail. A description of

participants' characteristics was also presented in this chapter. In addition, to prepare for the subsequent analysis, reliability testing was attempted for quantitative and qualitative date (for coding). This chapter is concluded with descriptive analysis using frequency and means on three aspects: subjects that participants are taking or have taken, sources of information on giftedness and general perceptions of giftedness and talent based on agreement on item statement. In the next chapter, I shall present the second part of the findings of this study (quantitative findings).

Chapter 7: Findings of main study - Quantitative (Part B)

7.1 Introduction

In this chapter, I shall present the quantitative findings of this study exclusively to partially answer two research questions[146]. The discussion of the research questions is presented in two separate sections. The first section presents the analyses and findings to answer the **Research Question no. 1: What is the conception of giftedness and talent among pre service and in service teachers in Malaysia?** In this section, a description of each proposed dimension in a personally developed scale called Conception of Giftedness (A Malaysian Context) is presented first. Then, discussion in this chapter proceeds to the statistical analyses conducted to detect the underlying pattern of responses on the scale items. Principal Component Analysis for a single group is used to explore the conception of giftedness and its patterns as held by the pre service and in service teachers in Malaysia. A single group of analysis is used instead of two separate analyses due to several reasons (refer to **Section 7.3.3** for details).

Then, the discussion in the second section revolves around the exploration of significant differences between the groups of participants (in terms of: a) group type, b) gender and c) subject taken) and thus, inferential statistics was used for each aspect. The exploration of differences between the two groups is meant to answer the **Research Question no. 2: Is there any difference in the conception of giftedness and talent among pre service and in service teachers in Malaysia?**

7.2 Measurement of Pre service and In service teachers' conception of giftedness and talent

One of the aims of this study was to develop and test a scale for measuring conception of gifted and talented in Malaysia that are conceptually defined as views, understanding and beliefs about gifted and talented individuals, assessments used to identify, education provisions implemented as well as significant others such as teachers and parents. The initial

[146] Research questions no. 1 and 3 are explored using quantitative and qualitative data analyses and thus, in this regards, the analyses presented in this chapter are meant to answer the quantitative findings only. The discussion of qualitative findings will be presented in the next chapter (**Chapter 8**).

step toward achieving this aim is to explore the existing scales available to measure conception of gifted and talented in Malaysia and the attempt was futile due to scarcity of gifted studies in Malaysia. Vast studies are available from countries like UK and US (as discussed in **Chapter 2** and **3**) and drawing from various research findings as well as propositions from various models and/or theories of giftedness, I constructed a scale to measure conception of giftedness suitable for my study. Initially, 98 items were constructed and tested in a pilot study involving 154 participants (see **Chapter 5** for details). It was revised and only 60 items were retained and used in the main study. There were 10 proposed dimensions for 60 items and the dimensions are based on themes which derived from research findings and propositions from models or theories of giftedness as mentioned in previous chapters (**Chapter 2**, **3** and **4**).[147]

In summary, all of the dimensions are defined accordingly[148]. In this study, the dimensions were initially categorised into two main dimensions: General and Specific. For general dimension, there are three components (definitions, values and perceptions). For specific dimension, there are two components (internal and external). Each component is categorised further into subcomponents. For internal component, there are four subcomponents (cognitive, attitudes, behaviours, and biological). For external component, there are three subcomponents (assessment, programs and significant others).

Investigation on the pattern structures of the conceptions of giftedness is not attempted in this study (see **Section 7.3.3** for details on the rationale of three tiers of PCA**).**

7.3 Principal Component Analysis (PCA) technique

Initially, for the pilot data, exploratory factor analysis was used to assess the factor structure of the research instrument. According to Tabachnick and Fidell (2007) an exploratory factor analysis can 'describe and summarise data by grouping together variables that are correlated' (p. 609). An exploratory analysis also serves as a useful approach to determine the number of components that might exist in a group of items (Field, 2005). As Carr (Carr, 1992, p. 133)puts it:

[147] See **Chapter 5** – **Section 5.4.1** and **5.5.2** for more discussion and **Appendix 13** for summary of each item with relevant reference.
[148] The discussion about the dimensions is presented in details in **Chapter 5** previously.

'Factor analysis is a statistical technique commonly used to examine the interrelationships among variables…. Factor analysis may also be used as a reductive technique to condense a large number of variables into a smaller number of underlying variables that retain most of the information in the larger, original variable set'

In general, there are two analyses that can be used for exploratory analysis: Principal Component Analysis (PCA) and Factor Analysis (FA). In this study, PCA was used because it is a better choice as compared to factor analysis (FA) in which it could serve as 'an initial step in FA where it reveals a great deal about maximum number and nature of factors' (Tabachnick and Fidell, 2007, p. 635). In addition, using PCA also aim to evaluate the extent to which variables fit onto ten proposed dimensions (components)[149].

In principle, PCA and FA involve statistically similar process. However, the main difference is in the rotation of variables used in analysis. In principal component analysis, the rotation used is orthogonal rotation and thus variables are analysed individually as it is presumed as unrelated, whereas in factor analysis, the rotation used is oblique rotation and thus only selective shared variances are analysed (Field, 2005; Tabachnick and Fidell, 2007). By assuming all variance of variables are unrelated, the data is reduced and calculated to yield a measure for each dimension that it is thought to represent. The dimensions are interpreted based on items with highest loading.

7.3.1 Principal Component Analysis (PCA): Pilot study

Ninety eight items (98) in pilot study were subjected to principal component analysis (PCA) using SPSS Version 14. Diagnostic tests are conducted to determine the adequacy for the instrument to be factor analysed. In **Table 7.1**, Bartlett's test of sphericity showed a significant result ($p<0.001$) for the instrument. However, since the sample was small (154

[149] To use FA would mean that I have prior information of variables and its components based on theoretical framework that I aim to explore or confirm. Therefore, FA is used to confirm underlying theoretical constructs. In this study, even though there is no theoretical framework to be explored or confirmed, yet emerged components could provide a pattern of conceptions of giftedness as a start and thus, the use of PCA is seemed as more appropriate.

participants), the analysis failed to produce a matrix even though the Kaiser-Meyer-Olkin value was .653 exceeding the recommended value of .6 (Kaiser, 1970; Kaiser, 1974).

Table 7.1: KMO and Bartlett's Test for pilot study

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.65
Bartlett's Test of Sphericity	Approx. Chi-Square	8587.35
df		4753.00
Sig.		.000

This result was expected since the sample size is small -i.e. 154 participants- and thus, the correlation coefficients might be less reliable. According to Tabachnick and Fidell (2007), a small sample might yield less reliable correlation coefficients as compared to large sample size and thus it is required that sample size should be large enough and adequate based on number of factors assessed. Some researchers argue that even though a small sample such as 100 is quite sufficient, however, running factor analysis might not yield reliable factors due to such a small sample size (Kline, 1994; Pett, Lackey et al., 2003; Tabachnick and Fidell, 2007). Kline (1994) further suggests replication in these circumstances. Pett et al. (2003) suggest 10 to 15 samples for every item of research instrument to assess the factorability of items. In this study, since there are originally 98 items (for the pilot study), it was an ideal to have at least 1000 samples (10 samples x 98 items would yield 980 ideal sample size). However, the participants were 154 and thus were not enough to conduct principal component analysis in this instance. As no factor was extracted, no rotation can be done. Therefore, the research instrument was refined from 98 items to 60 items and in the main study the factorability of items was assessed again.

In refining the instrument, selection for item retention is based on the high mean, standard deviation and item corrected value. From the pilot study, it was found that the ranges of the means for the items are from 4.561 to 2.254. The highest mean (4.561) is for item no. 19 (Gifts and talents are given by God). The lowest mean is for item no. 65 (Gifted students have heavier brains). Based on standard deviation, dispersion of responses from samples involved in the pilot study is known. The range standard deviation for the items is from 1.651 to .738. The highest standard deviation (1.651) is for item no. 2 (Gifted individuals have IQ test scores more than 140). The lowest standard deviation (.738) is for item no. 38 (Gifted individuals have excellent abilities).

7.3.2 Principal Component Analysis (PCA): Main study

To assess components from 60 items, PCA is performed again in the main study. In the main study, the sample size is bigger (1178 participants) as compared to in pilot study (154 participants) and thus, it is appropriate to perform PCA as suggested by Kline (1994), Pett, Lackey and Sullivan (2003) and Tabachnick and Fidell (2007).

Responses from 1178 participants to the 60 survey items were subjected to PCA using SPSS Version 17 to detect the main dimensions of conception of gifted and talented. It should be noted that PCA was used to summarise data into interpretable components while preserving the original data set. Prior to performing PCA, the suitability of data for exploratory factor analysis was assessed. Preliminary inspection of the correlation matrix revealed the presence of many coefficients of .3 and above. In addition, to determine the number of components to retain in this study, other than scree test, Kaiser's method and Bartlett's chi-square, Parallel Analysis was also used.

According to Zwick and Velicer (1982; Zwick and Velicer, 1986), even though scree test, Kaiser's method and Bartlett's chi-square are commonly used in determining the number of components to retain, yet all three approaches are less accurate in estimating the number of components. Zwick and Velicer (1986) further contend that

> *'the scree test was generally accurate but variable. Bartlett's chi-square test was less accurate and more variable than the scree test. Kaiser's method tended to severely overestimate the number of components'* (p. 432).

Also, Zwick and Velicer (1986) and Guadagnoli and Velicer (1988) proposed that parallel analysis was found to be more accurate in determining the number of components. Thus, in this study, following the proposition by Zwick and Velicer (1986) and Guadagnoli and Velicer (1988), I determined the number of components for the PCA accordingly using scree test, Bartlett's chi-square, Kaiser's method and parallel analysis.

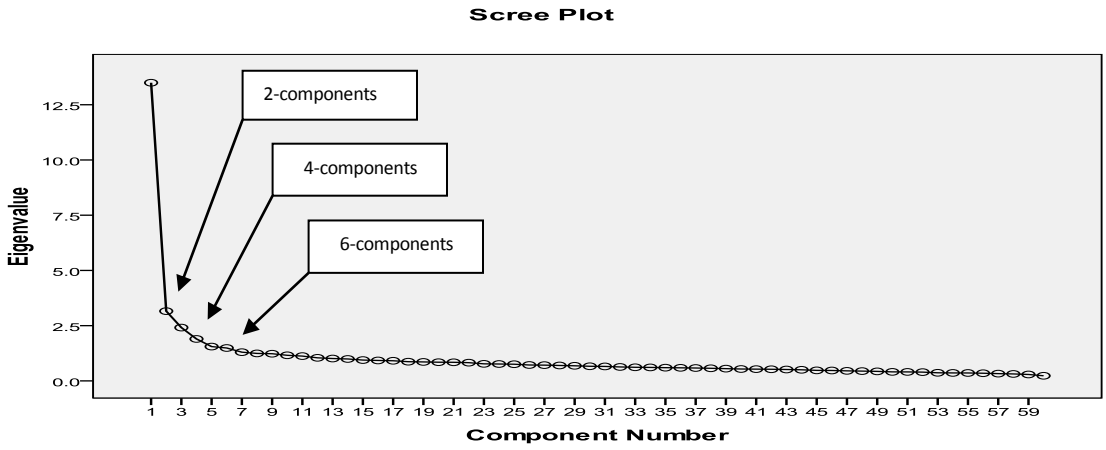
In this study, the Kaiser-Meyer-Olkin value was .936 exceeding the recommended value of .6 (Kaiser, 1970; Kaiser, 1974) and Bartlett's Test of Sphericity (Bartlett, 1954) revealed statistical significance supporting the factorability of the correlation matrix ($p < 0.001$).

Table 7.2: KMO and Bartlett's Test (Main study)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.94
Bartlett's Test of Sphericity	Approx. Chi-Square	23041.23
	df	1770
	Sig.	.000

Other than that, Cattell's (Cattell, 1966) scree test was also used. A visual scan of scree plot (**Figure 7.1**) shows that there was one dominant component. The distance between the first and second components was clear with a sharp drop whereas the following components seem to trail off with little difference. In this instance, even though there is one dominant component, yet in general the scree plot gives an indication or direction that the components yield from PCA could be suppressed to six components which are structured and interpretable.

Figure 7.1: Scree plot



Also, a systematic comparison was conducted to determine the factors for further investigation, in which eigenvalues obtained in SPSS Version 17 is compared with the eigenvalues from the random results obtained in Monte Carlo Parallel Analysis (Watkins, 2000) (see **Table 7.3**). According to Pallant (2007) if the value obtained in SPSS is larger than from Parallel Analysis, then the value is retained. If the value obtained in SPSS is smaller

than from Parallel Analysis, then the value is rejected. In this instance, it serves as a basis for the third tier of PCA -i.e. which would be considered as the best analysis for this study- (see **Section 7.3.3** for more discussion)**.**

Table 7.3: Comparison of eigenvalues from PCA and criterion values from parallel analysis

Component	Actual eigenvalue from PCA	Criterion value from Monte Carlo parallel analysis	Decision
1	13.496	1.4672	**accept**
2	3.157	1.4267	**accept**
3	2.413	1.3979	**accept**
4	1.899	1.3727	**accept**
5	1.533	1.3513	**accept**
6	1.489	1.3311	**accept**
7	1.300	1.3129	reject

In **Table 7.4** the six components solution explained a total of 22.5% of the variance with components no. 1 contributing 13.5%, components no. 2 contributing 3.2%, component no. 3 contributing 2.4%, component no. 4 contributing 1.9%, component no. 5 contributing 1.6% and component no. 6 contributing 1.5%. From the percentages of variances, it reveals the variances of component no. 1 and component no. 2 are varied tremendously and **Table 7.3** and scree plot confirm this (see **Figure 7.1**). In short, from the Monte Carlo Parallel Analysis, six components with eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (60 variables x 1178 participants) were detected. The suppression of components into six components was based on this principle for the third tier of PCA (see **Section 7.3.3.3** for details).

Table 7.4: Eigenvalues and variance explained for sixty components

Component	Initial eigenvalues		
	Total	% of variance	Cumulative %
1	**13.496**	**22.494**	**22.494**
2	**3.157**	**5.262**	**27.756**
3	**2.413**	**4.022**	**31.778**
4	**1.899**	**3.164**	**34.942**
5	**1.533**	**2.589**	**37.531**
6	**1.489**	**2.481**	**40.012**
7	1.300	2.167	42.179
8	1.244	2.073	44.251
9	1.2 30	2.050	46.301
10	1.159	1.931	48.232
11	1.122	1.871	50.103
12	1.044	1.740	51.843
13	1.012	1.687	53.530

14	.992	1.653	55.184
15	.943	1.571	56.755
16	.925	1.541	58.296
17	.911	1.518	59.815
18	.869	1.448	61.263
19	.858	1.431	62.693
20	.846	1.409	64.103
21	.842	1.403	65.506
22	.825	1.374	66.880
23	.772	1.286	68.166
24	.764	1.274	69.440
25	.754	1.257	70.697
26	.719	1.199	71.897
27	.713	1.189	73.085
28	.698	1.163	74.249
29	.684	1.140	75.388
30	.662	1.103	76.491
31	.655	1.091	77.582
32	.631	1.052	78.634
33	.616	1.026	79.660
34	.610	1.016	80.677
35	.598	.997	81.673
36	.592	.986	82.660
37	.583	.972	83.631
38	.570	.950	84.582
39	.554	.924	85.506
40	.538	.896	86.402
41	.532	.887	87.289
42	.526	.877	88.165
43	.515	.859	89.024
44	.502	.837	89.861
45	.476	.793	90.655
46	.471	.785	91.440
47	.454	.757	92.196
48	.443	.738	92.935
49	.431	.718	93.652
50	.408	.680	94.332
51	.406	.677	95.009
52	.397	.661	95.671
53	.367	.611	96.282
54	.360	.601	96.883
55	.359	.598	97.480
56	.346	.577	98.058
57	.329	.548	98.606
58	.314	.524	99.130
59	.291	.484	99.614
60	.231	.386	100.00

In summary, the scree plot and eigenvalue criteria propose that five or six components might be sufficient to represent the essential underlying patterns in the data. However, in this study, three tiers of PCA were attempted. The first solution of PCA with no component suppression is presented in **Table 7.5**. Then, in **Table 7.10**, the second solution of PCA with suppression to 10 proposed components is presented. Lastly, the solution of PCA with

suppression to six components based on Parallel Analysis comparison is presented in **Table 7.21**.

Throughout interpretations, certain criteria are taken into consideration to assist the interpretation process. First, for all interpretations, only loadings with more than 0.30 are selected. Second, some item might yield more than one high loading. Third, some loadings might yield positive and negative loadings. In both instances, only the highest loading is selected for interpretation. Forth, some items have loadings more than one component. In this instance, further interpretation relies on close examination on other items with high loadings in terms of its 'meaning relatedness'. 'Meaning relatedness' could be referred to items with statements that are closely linked to each other due to common features or similar 'themes'.

7.3.3 Rationale for three tiers of PCA: A single group analysis

In this study, even though there are two groups of participants -i.e. pre service and in service teachers-, three tiers of PCA is attempted as a single group analysis. This is because a separate analysis of PCA for each group did not reveal any meaningful separate structured pattern on the conception of giftedness and talent. This could be contributed to the number of participants of each group -i.e. 546 pre service teachers; 632 in service teachers- which are not sufficient to run a separate analysis using PCA as suggested by researchers like MacCallum et al. (1999) and Pett et al. (2003).

According to Pett et al. (2003), to assess the factorability of items, every item of research instrument needs at least 10 to 15 respondents. In this study, since there are 60 items in the survey, following the proposition by Pett et al. (2003), it might be appropriate to have 600 to 900 respondents for each group of participants involved in this study. In this instance, the number of the participants from only one of the groups -i.e. in service teachers- might be considered as sufficient to assess the factorability of items in two separate analyses. However, the suggestion by Pett et al. (2003) could be regarded as an ideal approach and arguably might yield more robust analysis. However, as emphasised earlier, the main focus of this study is to explore the conception of giftedness and talent among pre service and in service teachers as a whole unit and thus, it would be more appropriate to consider the two

groups as one single group for the PCA in order to answer the **Research Question no. 1: What is the conception of giftedness and talent among pre service and in service teachers in Malaysia?**

Other than that, since this is the first study ever attempt to discover the patterns of conception of giftedness among pre service and in service teachers in Malaysia, it is essential for me to explore several pattern structures yield from more than one PCA because it is hypothesised that the analyses from three PCA might yield varied patterns that worth to be investigated further (see **Appendix 27**). As mentioned previously (see **Figure 7.1**: **Scree plot**), a comparison of eigenvalues between initial PCA and Monte Carlo Parallel Analysis shows that six components might be considered for suppression in an analysis. Therefore, in this study, I attempted three tiers of PCA to investigate components yield in different PCA and compare consistency of items (item grouping). The consistency of items in various analyses confirms that the items might have similar characteristics and thus, it belongs to similar group -i.e. component- despite three tiers of PCA. In summary, the three analyses are attempted to explore the consistency of patterns among items prior as well as determine the best analysis in presenting the conception of giftedness and talent among pre service and in service teachers in Malaysia.

In addition, even though the **Research Question no. 2: Is there any difference in the conceptions of giftedness and talent among pre service and in service teachers in Malaysia?** is posed in this study, yet the difference between the two groups is not analysed specifically on the patterns of their conception of giftedness and talent, rather it is based on the difference on general group characteristics and thus, independent t-tests are used to explore the differences. The comparison between two groups is further expanded into two other characteristics: gender and subject taken (see **Section 7.4**).

7.3.3.1 First analysis: Principal Component Analysis with no component suppression

It was the initial attempt to test whether the dimensions by PCA map onto the ten proposed dimensions. Prior to that, an interpretation on the dimensions from PCA with no component suppression was attempted. There are 13 components emerged from rotation diverge which represent about 53% of the total variance. **Table 7.5** shows the loadings of each item on 13 rotated components. It shows that the loadings on all thirteen components were

varied and dispersed. There are two clusters of item loadings: positive and negative in component no. 2, 5, 9, 10, 11, 12 and 13. Some components yield more than five highest loadings (components no. 1, 2 and 4). The components that yield less than five highest loadings are component no. 5, 6, 7, 9, 10, 11, 12 and 13. To assist interpretation, only items with loadings above .30 are selected. An overview of **Table 7.5** shows there are some overlapping items in more than one component with loadings more than 0.30.

For instance, item no. 30 loads in component no. 1 (.514 loading), component no. 2 (.344 loading) and component no. 9 (.315 loading). Even though it is overlapping, the highest loadings are chosen (for instance, in item no. 30, first component with loading .514 is selected). This finding (overlapping) suggests that some items might belong to more than one component.

An interpretation of component no. 1 was attempted first. **Table 7.6** which is extracted from **Table 7.5** shows items with largest positive loadings on this component. Item loadings with more than 0.30 are chosen as a threshold. It leads to fewer cases of item loads in more than one component. The use of lower threshold as a cut-off point would lead to overlapping components for items and thus, it is difficult to detect meaningful pattern. For component no. 1, there are seven items with high loadings (item no. 23, 27, 28, 29, 30, 31 and 35) from two proposed dimensions: Attitudes and Cognitive (both are under 'Specific Internal' category).

Table 7.5: Loadings for thirteen components (First interpretation

Item no. Description	Component												
	1	2	3	4	5	6	7	8	9	10	11	12	13
1.Similar characteristics					.247			**.598**	.226				
2.Labelling by experts		.333	.137	.251		.130		**.515**			.135		
3.Different classification (levels)	.231	-.109						**.515**			.213	.149	
4.Social functions	.132	.245			.135			**.462**			.371	.105	
5.Experts (definition)	.230	.103	.208		.200			.309			**.416**	-.233	
6.Importance of labelling	.138					.155		.119	.200		**.692**		
7. Hereditary							.166	.120	**.774**	.132			
8.Resemblance (Parental)	.111				.120		.118		**.785**				
9.Gender predominance	.245			.105			(**.418)***	.221	.393		-.139		.109
10. IQ scores	.256	.204		.109			.333	**.459**			-.153		
11.Well-balanced	.164	.144			**.625**	.125		.112	.223			.107	
12.Academic achievement			.114				**.580**		.185	.145	-.125	-.197	.115
13. SES			.127	.124	.115		**.510**		.322		.134		.174
14. God's given		.431		.221					-.167		**(.433)***	.122	
15.Nature VS nurture		.169		.204			.326		-.117		**.398**		.119
16.Social contextual definition	.185	.115			.331		.451	.243	-.110	.127	.182		-.174
17. Career path							**.696**				.115	.216	
18. Balance superiority	.193	.192	.113		**.591**		.194	.137					.132
19. Demonstrability		**.543**		.110	.372							.101	.157
20.Excellent abilities	.167	**.670**		.163	.281	.152							
21. More than one domain	.191	**.580**			.210	.213							
22.Above average ability	.226	**.600**	.115	.115				.214				.159	
23. Creative	**.417**	.327	.111		.186		.147		.115				.203
24. Innate ability	.172	**.607**	.118	.122			.167				.192	.131	
25.Systematically developed	.288	**.456**	.227	.185							.168		-.198
26.Information processing (speed)	.339	**.475**	.107	.321							.115		
27. Memory	**.465**	.413		.350							.151		
28. Balance of skills and tasks	**.587**	.267		.175	.259					.127			
29. Analytical	**.686**	.202	.148			.180							
30. Critical	**.727**	.166		.147		.125					.140		.169
31. Practical	**.651**	.128	.139	.111	.152					.141		.125	
32.Self-perception (academic	.278	.183	.163	**.418**	.367			.127				.133	

competency)													
33. Motivation	.353	.173	.174	.397	**.489**			.102		.110			
34.Self-confidence	.414		.135	**.502**	.429								
35. Perfectionist	**.504**		.251		.131			.105		.177		.347	
36.Precociousness (early age)	.274	.173	.137	**.370**						.183	.106	.290	
37. Vulnerability	.244		.184				.239	.145		.189		.298	**.499**
38.Peculiar behaviours	.187			.240		.150	.125						**.657**
39.Perseverance (task completion)	.241		.169	**.421**	.349					.118		.177	
40.Social comparison strategies	.305			.181	.195	.220	.134			.139		**.572**	
41.Social adjustability	.149	.135	.183	.347		**.379**	.188			.112		.221	-.224
42. Brain activation	.180	.205		**.646**									.120
43. Brain size	.165									**.829**			.110
44. Brain weight						.175	.149		.117	**.830**			
45.Expert identification						**.622**				.178		.169	
46. Age limit	.174	.130	.208	.122	.111	**.652**							
47.Early identification		.135	.202	.398		**.529**							
48.Criterion-performance based		.199	.167	.204	.225	.240			.120	.165	.194	**.309**	.238
49. IQ tests		.209	.200	**.553**		.201				-.136	.141	.122	.114
50. Media	.115	.160	.289		.164	.262			.114			**.413**	.214
51.Deliberate efforts		.200	.281	**.468**		.326				-.196	.116		.110
52.Education provision		.189	.412	.318	-.117	**.360**		.120		-.123		.112	
53.Enrichment programmes		.131	.313	.173		.121		.332				**(.392)***	.129
54.Acceleration programme	.266		**.386**	.263		.161	.189	.120	-.130				.150
55.Limited intervention/provision	.210		**.327**		.161	.182		.233		.141			.255
56. Curriculum		.227	.436	**(.470)***		.191				-.116			
57.Parental education		.155	**.660**		.136				.249	.105	.125	.142	.111
58. Parenting style	.140	.119	**.778**	.134		.117							
59.Teachers' values	.148		**.666**	.159		.136	.107	.150		.109			
60. Mentorship	.112	.138	**.636**	.190		.148						.101	

Note: Loadings less than 0.1 are suppressed. Loadings (0.3 and more) are selected for interpretation. In this instance, the highest loading even if it is less than 0.3 would be stated for reference. *This item has high loading in more than one component and the loadings are slightly different from each other (i.e. item no. 9, 14, 53, and 56)

Table 7.6: Item with high loadings on the component no. 1 of the 13-component solution

No	Item	Loading	Proposed dimension
23	Gifted individuals are creative	.417	Cognitive
27	Gifted individuals have excellent memory	.465	Cognitive
28	Gifted students have the ability to balance between skills and tasks given	.587	Cognitive
29	Gifted individuals are analytical	.686	Attitude
30	Gifted individuals are critical	.727	Attitude
31	Gifted individuals are practical	.651	Attitude
35	Gifted individuals are perfectionist	.504	Attitude

The second rotated component resembles the 'Cognitive' dimension because seven out of eleven items were loaded. The seven items of proposed 'Cognitive' dimensions are as presented in **Table 7.7**.

Table 7.7: Item with high loadings on component no. 2 of the 13-component solution

No	Item	Loading	Proposed dimension
19	Gifted individuals must be able to demonstrate their abilities	.543	Cognitive
20	Gifted individuals have excellent abilities	.670	Cognitive
21	Gifted individuals has one or more exceptional abilities	.580	Cognitive
22	Above average ability is one of the characteristics of giftedness	.600	Cognitive
24	Gifted individuals are endowed with innate untrained abilities	.607	Cognitive
25	Talented individuals have outstanding mastery of systematically developed abilities	.456	Cognitive
26	Gifted individuals have extraordinary speed of information processing	.475	Cognitive

Seven items from two proposed dimensions -Programs and Significant Others- were loaded in the component no. 3 (see **Table 7.8**). Both proposed components are the sub-dimension of 'External Specific' dimension. All items from the 'Significant Others' dimension was loaded whereas three out of seven items were loaded from Program dimension.

Table 7.8: Item with high loadings on component no. 3 of the 13-component solution

No	Item	Loading	Proposed dimension
52	The result of educational interventions may vary for different gifted students	.412	Program
54	Acceleration programme gives mixed benefits to various gifted students	.386	Program
55	Gifted individuals can flourish and reach the level of eminence with limited training and environmental stimulation	.327	Program
57	Parental education background is correlated with intellectual skills of gifted students	.660	Significant Others
58	Parenting style is linked with the development and achievement of gifted students in a long term run	.778	Significant Others
59	Teachers might have different education-related values from the parents of gifted students	.666	Significant Others
60	Mentorship has positive significant impact on gifted adolescents	.636	Significant Others

In the rotated component no. 4 (refer to **Table 7.9**), six items from four proposed dimensions were loaded. Examining the contents of each item, there are little 'meaning relatedness' and thus, it is difficult to interpret the overall component.

Table 7.9: Item with high loadings on component no. 4 of the 13-component solution

No	Item	Loading	Proposed dimension
32	Gifted students have high perceptions of their own academic competency	.418	Attitude
34	Gifted individuals have high self-confidence	.502	Attitude
39	Gifted individuals are persevered in task completion	.421	Behaviour
49	IQ tests are better predictor in identifying gifted students	.553	Assessment
51	Deliberate efforts and training for gifted students help to sustain and enhance their gifts	.468	Program
56	Flexible curriculum should be implemented to suit with the needs of gifted students	.470	Program

For the rest of components (component no. 5 to component no. 13), the items loaded are varied and thus, it is difficult to determine the pattern of components as a whole. For example, the fifth rotated component comprises of three items from three different dimensions: Perception, Cognitive and Behaviours. 'Perception' dimension is from general dimension whereas 'Cognitive' and 'Behaviours' dimensions are from internal specific dimension. In addition, there are four items from 'Behaviour' and 'Assessment' dimensions that loaded in component sixth. Three items are from 'Assessment' dimension and one item is from 'Behaviour' dimension. In this instance, the yielded dimensions are contradictory as it belongs to external and internal sub-

categories. Thus, it is difficult to interpret this component due to these contradictory dimensions. For component no. 7, five items are loaded. One item is under the category of 'Value' whereas another two items are from the category of 'Perception'. All are from the same main dimension i.e. 'General'. Component no. 8 resembles for definitions as four items out of six items loaded in this component. Component no. 9 comprises of two items from 'Values'. Component no. 10 comprises of two items from 'Biological' dimension. Component no. 11 comprises of four items from 'Definitions' and 'Perceptions' dimensions. Component no. 12 comprises of four items from 'Behaviours' dimension (1 item), 'Assessment' dimension (2 items) and 'Program' dimension (1 item). Component no. 13 comprises of two items from 'Behaviours' dimension.

Summary

With any suppression, 13 components are yielded from this first PCA. Thirteen components for 60 items lead to imprecise interpretation of the conceptions of giftedness. Some items like item no. 11, 18, and 33 are loaded into component no. 5 yet all of the items do not belong to any of the dimensions proposed in this study. Thus, I attempted another two analyses to investigate the pattern structures of the conceptions of giftedness more closely.

7.3.3.2 Second analysis: Principal Component Analysis with suppression to 10 proposed components

The second analysis with suppression of components to 10 yields a dispersion of items from original proposed components. As compared to the first PCA with no suppression, PCA with suppression of 10 components reveals a more structured pattern. The results of the ten proposed components with varimax rotation for 1178 participants are presented in **Table 7.10**. Of the 10 rotated components, five components have more than five items loading. All items have cross-loading among components but for interpretation, only the highest loading for an item in a component is considered. Like previous analysis, there are two clusters of loading emerged: positive and negative. There are four components with negative loading (component

no. 1, 6, 8 and 10). There are three items with similarly high loadings in more than one component (item no. 10, 14 and 36). From a visual scan, the amounts of item loadings are hierarchical. The component with the highest amount of item loadings is component no. 1 (13 items) and followed by component no. 2 (10 items) until component no. 5 (6 items) before fluctuated in component no. 6 with three items loading. In component no. 7, there are five items loading (slightly higher than component no. 6). The lowest component with item loading is component no. 1 with one item loading.

Table 7.10: Loadings for ten proposed components (Second interpretation)

Item no. Description	Component									
	1	2	3	4	5	6	7	8	9	10
1. Similar characteristics					**.477**		.122	.301		
2. Labelling by experts		.285	.317	.111	**.466**					
3. Different classification (levels)	.177				**.532**	.115				-.178
4. Social functions	.134	.232	.121		**.595**					
5. Experts (definition)	.170	.190		.173	**.543**					
6. Importance of labelling			.220		**.531**			.115	.105	
7. Hereditary					.125	.122	.143	**.764**		
8. Resemblance (Parental)	.115	.101						**.783**		
9.Gender predominance	.195					.136	.394	**.443**	.108	-.186
10. IQ scores	.149	.227	.142		.230		(**.351)***			**-.360**
11. Well-balanced	**.426**	.246			.216		.124	.235	-.238	.287
12. Academic achievement	-.116	.141		.116			**.525**	.268	.127	-.114
13. SES	.123			.115			**.481**	.341	.235	
14. God's given		**(.330)***	**.313**		.282	-.114		-.239		.273
15. Nature VS nurture		.167	.186		.268		**.308**	-.111	.253	.107
16. Social contextual definition	.266	.186			.324	.140	**.484**		-.169	
17. Career path							**.712**			
18.Balance superiority	**.385**	.306		.183	.221		.229			.260
19. Demonstrability	.193	**.531**								.365
20. Excellent abilities	.182	**.712**	.193							.149
21. More than one domain	.120	**.647**	.136	.108	.109					
22. Above average ability	.156	**.571**	.186			.108				
23. Creative	.279	**.446**		.166			.115	.112	.201	
24. Innate ability		**.574**	.262		.124		.168		.138	
25. Systematically developed	.241	**.467**	.267	.150						
26. Information processing (speed)	.204	**.495**	.322		.136				.212	-.162

27. Memory	.403	**.464**	.288		.133	.104			.216	-.100
28. Balance of skills and tasks	**.556**	.389			.159	.112			.209	
29. Analytical	**.428**	.386		.170	.135				.230	-.338
30. Critical	**.514**	.344			.178				.315	-.254
31. Practical	**.549**	.269		.158	.125				.134	-.242
32. Self-perception (academic competency)	**.553**	.213	.281	.140						
33. Motivation	**.655**	.234	.175	.148	.133					.125
34. Self-confidence	**.724**	.105	.214							
35. Perfectionist	**.517**	.103		.280		.257				-.181
36. Precociousness (early age)	**.328**	.123	**(.333)***			.188	.104		.248	
37. Vulnerability	.130			.252		.252	.266		**.506**	
38.Peculiar behaviours		.154	.172	.104		.135			**.605**	
39. Perseverance (task completion)	**.537**		.232	.140			.135		.143	.188
40.Social comparison strategies	**.473**		.254	.137		.365	.195			
41.Social adjustability	.230	.128	**.518**	.132		.238	.188		-.161	-.114
42. Brain activation	.321	.169	**.534**						.249	
43. Brain size	.205					**.685**	.109		.235	
44. Brain weight						**.791**	.164			
45.Expert identification		.164	.317	.155		**.475**				
46. Age limit		.258	**.411**	.232	.138	.222				
47.Early identification		.149	**.609**	.164		.210				
48. Criterion-performance based	.164	.164	.297	.178		.291			.156	**.382**
49. IQ tests	.205	.153	**.590**	.135	.114				.123	.187
50. Media	.188	.166	.234	**.346**		.256			.105	.210
51. Deliberate efforts	.118	.178	**.604**	.231						.107
52.Education provision		.167	**.568**	.355	.113					-.119
53. Enrichment programmes			.286	**.353**	.164		.171		.190	
54. Acceleration programme	.265	.106	.288	**.378**	.117		.174		.179	
55. Limited intervention/provision	.151	.123		**.382**	.272					
56. Curriculum		.190	**.560**	.339						
57.Parental education	.113	.125		**.647**	.152					.160
58. Parenting style	.150	.140	.263	**.729**						
59. Teachers' values	.188		.229	**.646**	.114		.103			
60. Mentorship	.135	127	.311	**.595**						

Note: Loadings less than .01 are suppressed. The number of components is suppressed to ten as proposed initially in the study. The largest loadings (0.3 and more) are selected for interpretation.
*This item has high loading in more than one component and the loadings are slightly different from each other (i.e. item no. 10, 14, and 36).

Table 7.11 shows the excerpt of item loading from **Table 7.10** for component no. 1. Thirteen items from four proposed dimensions are loaded in component no. 1. The proposed dimensions are 'Perceptions', 'Cognitive', 'Attitudes' and 'Behaviours'. Item no. 11, 18 and 28 are originally

proposed in two different dimensions yet looking closely at each of the statement shows that each gauges similar theme 'ability to balance different domains' and thus retained in this component. Item no. 36 is cross-loading in component no. 3 and for this instance, a close examination on 'meaning relatedness' would be attempted later on. For item no. 39 and 40, both are proposed under the dimension of 'Behaviours' dimension. A close examination shows that both items can be broke down as 'persevere' (item no. 39) and 'approach' (item no. 40) which relate to one's attitude in task completion (i.e. perseverance to complete a task for item no. 39 or approaches to maintain self-efficacy when dealing with poor performance in difficult task for item no. 40).

Table 7.11: Item with high loadings on component no. 1 of the 10-component solution

No	Item	Loading	Proposed dimension
11	Gifted individuals are cognitively, emotionally and socially well-balanced	.426	Perception
18	Gifted individuals have balance superiority in verbal and mathematics efficacy	.385	Cognitive
28	Gifted students have the ability to balance between skills and tasks given	.556	Cognitive
29	Gifted individuals are analytical	.428	Attitude
30	Gifted individuals are critical	.514	Attitude
31	Gifted individuals are practical	.549	Attitude
32	Gifted students have high perceptions of their own academic competency	.553	Attitude
33	Gifted students have superior academic motivation	.655	Attitude
34	Gifted individuals have high self-confidence	.724	Attitude
35	Gifted individuals are perfectionist	.517	Attitude
36	Precociousness at early age does predict above average ability	(.328)*	Attitude
39	Gifted individuals are persevered in task completion	.537	Behaviour
40	Gifted individuals use social comparison strategies to enhance self-efficacy when they thought that they have performed poorly academically	.473	Behaviour

*This item has high loading in more than one component and the loadings are slightly different from each other (i.e. item no. 36).

For component no. 2, there are forty eight items were loaded as presented in **Table 7.12**. Ten items have high loadings and thus selected for this component. Nine items are from 'Cognitive' dimension whereas only one from 'Perception' dimension (item no. 14). A close examination on item no. 14 shows that it has two high and slightly different loadings in two components (component no. 2 and 3).

Table 7.12: Item with high loadings on component no. 2 of the 10-component solution

No	Item	Loading	Proposed dimension
14	Gifts and talents are given by God	(.330)*	Perception
19	Gifted individuals must be able to demonstrate their abilities	.531	Cognitive
20	Gifted individuals have excellent abilities	.712	Cognitive
21	Gifted individuals has one or more exceptional abilities	.647	Cognitive
22	Above average ability is one of the characteristics of giftedness	.571	Cognitive
23	Gifted individuals are creative	.446	Cognitive
24	Gifted individuals are endowed with innate untrained abilities	.574	Cognitive
25	Talented individuals have outstanding mastery of systematically developed abilities	.467	Cognitive
26	Gifted individuals have extraordinary speed of information processing	.495	Cognitive
27	Gifted individuals have excellent memory	.464	Cognitive

*This item has high loading in more than one component and the loadings are slightly different from each other (i.e. item no. 14).

In **Table 7.12**, the solution for component no. 3 which yields nine items with high loadings in is presented. In this component, the dimensions of item loaded are so diverse and thus a further investigation would be attempted in line with finding the best interpretation of represented items. In **Table 7.13**, item no. 14 is also included to examine its 'meaning relatedness' with other items. Other than item no. 14, item no. 36 is also cross-loading in other component i.e. component no. 1.

Table 7.13: Item loadings on component no. 3 of the 10-component solution

No	Item	Loading	Proposed dimension
14	Gifts and talents are given by God	(.313)*	Perception
36	Precociousness at early age does predict above average ability	(.333)*	Attitude
41	Social adjustability is one of the characteristics essential in ensuring later achievement in adulthood for gifted individuals	.518	Behaviour
42	Gifted individuals has higher brain activation as compared to non-gifted individuals	.534	Biological
46	There is no age limit to identify gifted individuals	.411	Assessment
47	Assessment at early age could provide psychological information about gifted students	.609	Assessment
49	IQ tests are better predictor in identifying gifted students	.590	Assessment
51	Deliberate efforts and training for gifted students help to sustain and enhance their gifts	.604	Program
52	The result of educational interventions may vary for different gifted students	.568	Program
56	Flexible curriculum should be implemented to suit with the needs of gifted students	.560	Program

*This item has high loading in more than one component and the loadings are slightly different from each other (i.e. item no. 14, and 36).

Eight items with high loadings from three dimensions are loaded in component no. 4 as presented in **Table 7.14**. The dimensions are: Assessment, Programs and Significant Others. To assist interpretation, items with highest loading are examined first. The highest loadings are for item no. 57, 58, 59 and 60. All belong to the 'Significant Others' dimension. Three from eight items belong to the 'Programs' dimension whereas one item belongs to 'Assessment' dimension. The lowest loading is for item no. 51 (0.346 loading) and thus, it can be interpreted that item no. 51 has weak correlation within this component as compared to the other items.

Table 7.14: Item loadings on component no. 4 of the 10-component solution

No	Item	Loading	Proposed dimension
50	Media attention helps in identifying gifted children	.346	Assessment
53	Enrichment programme is better than acceleration programme as students do not have to skip grades	.353	Programs
54	Acceleration programme gives mixed benefits to various gifted students	.378	Programs
55	Gifted individuals can flourish and reach the level of eminence with limited training and environmental stimulation	.382	Programs
57	Parental education background is correlated with intellectual skills of gifted students	.647	Significant Others
58	Parenting style is linked with the development and achievement of gifted students in a long term run	.729	Significant Others
59	Teachers might have different education-related values from the parents of gifted students	.646	Significant Others
60	Mentorship has positive significant impact on gifted adolescents	.595	Significant Others

Table 7.15 presents solution of PCA for component no. 5. For component no. 5, the six items with high loadings are from the same dimension -i.e. 'Definition' dimension- and thus, it can be interpreted that component no. 5 resembles most one of the original proposed dimension (Definition). The loadings among all items are ranged from .595 (item no. 4) to .466 (item no. 2).

Table 7.15: Item loadings on component no. 5 of the 10-component solution

No	Item	Loading	Proposed dimension
1	Gifted individuals and talented individuals are similar in their characteristics	.477	Definition
2	Giftedness is a label given by a group of experts such as teachers to label students with exceptional ability	.466	Definition
3	Gifted students can be classified as mildly, moderately and highly gifted	.532	Definition
4	Being gifted means the gifts or talents possess by a gifted individual is recognised, accepted and valued by society and culture where he or she belongs	.595	Definition
5	Experts in gifted education refers to individuals with distinct contribution in gifted education field	.543	Definition
6	Labelling is essential in identifying gifted students	.531	Definition

For component no. 6, there are three items with high loadings from two dimensions as presented in **Table 7.16**. However, a close examination shows that two items have strongest loadings (item no. 44 and 45) and thus, it have strongest correlations in this component. The third item has .475 loading and thus, it can be interpreted that the loading has salient difference with the other two items.

Table 7.16: Item loadings on component no. 6 of the 10-component solution

No	Item	Loading	Proposed dimension
43	Gifted students have bigger brains	.685	Biological
44	Gifted students have heavier brains	.791	Biological
45	Experts identification of gifted students are highly reliable and valid	.475	Assessment

Table 7.17 shows five items with high loading in component no. 7 from the same dimension -i.e. 'Perception' dimension-. The highest loading is for item no. 17 (.712 loading) and has no cross-loading in other components. The lowest loading is for item no. 15 (.308 loading).

Table 7.17: Item loadings on component no. 7 of the 10-component solution

No	Item	Loading	Proposed dimension
12	Gifted individuals could be academic underachievers	.525	Perception
13	Familial social economic status (SES) predicts adulthood achievement of gifted individuals	.481	Perception
15	Gifts are innate while talents are developed	.308	Perception
16	Giftedness is defined based on social-contextual factors such as	.484	Perception

	religious belief and moral values		
17	Gifted students have difficulties in choosing career	.712	Perception

Table 7.18 presents component no. 8 from the ten-component solution, there are three items with high loadings loaded in this component. Only two items have the strongest loadings i.e. item no. 7 (.764 loading) and item no. 8 (.783 loading) whereas item no. 9 has .443 loading. Even though item no. 9 has lower loading than the other two, since it was in proposed dimension, therefore, it would be retained for future analysis.

Table 7.18: Item loadings on component no. 8 of the 10-component solution

No	Item	Loading	Proposed dimension
43	Gifted students have bigger brains	.685	Biological
44	Gifted students have heavier brains	.791	Biological
45	Experts identification of gifted students are highly reliable and valid	.475	Assessment

For component no. 9, there are twenty seven items are loaded but only two have the highest loadings (item no. 37 and 38) as presented in **Table 7.19**. Both items are from two different dimensions, but from a close examination of statements, it was concluded that both items share an element of 'meaning relatedness'. Statements from both items are: 'Vulnerability is one of the characteristics of gifted students' (item no. 37) and 'Gifted individuals exhibit peculiar behaviours' (item no. 38). A close examination reveals that item no. 37 conveys an aspect of behaviour which is being vulnerable. Even though it is conveyed in general term i.e. 'vulnerability' yet it is closely linked with item no. 38 which conveys 'peculiarity of behaviours'. In this instance, both items gauge psychological element of being different through certain behaviours that tend to be associated with exceptional individuals such as gifted and talented.

Table 7.19: Item loadings on component no. 9 of the 10-component solution

No	Item	Loading	Proposed dimension
37	Vulnerability is one of the characteristics of gifted students	.506	Attitude
38	Gifted individuals exhibit peculiar behaviours	.605	Behaviour

For component no. 10, there is only one high loading for item no. 48 as presented in **Table 7.20**. Item no. 48 conveys a type of assessment i.e. criterion-performance based can be used in

identifying gifted and talented students. Since there is one high loading in this component, further analysis of other items are attempted. There are twelve items with negative loadings (item no. 3, 9, 10, 12, 26, 27, 29, 30, 31, 35, 41, and 52) in this component. There are twenty five items loaded in this component and cross-loading with other components. Item no. 48 is cross-loaded with component no. 1, 2, 3, 4, 6, and 9. However, the difference between loadings in component no. 10 and the rest of components is salient and thus, it is interpreted that component no. 10 has one high loading only based on the highest value.

Table 7.20: Item loadings on component no. 10 of the 10-component solution

No	Item	Loading	Proposed dimension
48	Criterion-performance based assessments such as National Examination can identify gifted students	.382	Assessment

Summary

A comparison between the findings from the first PCA and second PCA reveals that there are some consistencies of item grouping in some of the items. For example, in the first PCA, item no. 1, 2, 3, 4, and 5 are loaded in the same component. In the second PCA, the same items are loaded again in the same component. Even though there is another one item more in the second PCA solution, yet, it shows that at least 5 items are consistently loaded together in this component (see **Appendix 27** for details). In addition, there are 45 items loaded in similar components in both solutions. Another PCA is attempted to discover consistencies of item grouping among items.

7.3.3.3 Third analysis: Principal Component Analysis with suppression to six-components based on Parallel Analysis comparison

Table 7.21 shows the rotated loadings for the suppressed six-components. Looking at two previous principal component analyses, the pattern structures of components are still ambiguous and thus it is difficult to interpret the higher-order of components. The findings from both analyses suggest differences between dimensions of conceptions of giftedness that Malaysian pre service and in service teachers held -as a part of their overall teaching conceptions- and the dimensions initially are proposed.

Table 7.21: Loadings for six components (Third interpretation)

Item no. Description	Component					
	1	2	3	4	5	6
1. Similar characteristics			**.490**	.146		.364
2. Labelling by experts	.170	.365	**.434**		-.200	
3. Different classification (levels)			**.560**	.113	.126	
4. Social functions	.271	.256	**.508**		-.127	
5. Experts (definition)	.255	.349	**.437**			
6. Importance of labelling	**.264**	.215	.179			**(.287)***
7. Hereditary	.101		.198	.143	.150	**.717**
8. Resemblance (Parental)	.176			.173		**.722**
9. Gender predominance			.149	**(.378)***		**.368**
10. IQ scores	.216	.106	.277	**.440**		
11. Well-balanced	.344		**.403**		.129	.236
12. Academic achievement				**.611**		.209
13. SES		.172		**.413**		.376
14. God's given	**.323**	**(.327)***	.205		-.226	-.120
15. Nature VS nurture	.242	.268	.151	**.319**		
16. Social contextual definition	.229		**.464**	.362	.177	-.117
17. Career path			.193	**.622**	.166	
18. Balance superiority	.308		**.457**	.227		.106
19. Demonstrability	**.455**	.143	.273			
20. Excellent abilities	**.633**	.251			-1.25	.135
21. More than one domain	**.757**	.279		.180	-.104	.196
22. Above average ability	**.562**	.177	.195	.152		
23. Creative	**.542**	.130		.179		.119
24. Innate ability	**.521**	.253		.259		
25. Systematically developed	**.502**	.436				
26.Information processing (speed)	**.505**	.363		.188		
27. Memory	**.637**	.332		.112		
28. Balance of skills and tasks	**.610**	.157	.211		.174	.114
29. Analytical	**.637**	.151		.152	.225	
30. Critical	**.629**	.629			.195	
31. Practical	**.553**	.180	.154	.215	.334	
32.Self-perception (academic competency)	**.484**	.484	.194		.254	

33. Motivation	**.580**	.291	.339		.222	
34. Self-confidence	**.510**	.510	.232	-.166	.292	
35. Perfectionist	.388		.143	.190	**.495**	
36. Precociousness (early age)	**.427**					
37. Vulnerability	.150	.165		**.578**	.151	
38. Peculiar behaviours	.199	.194		**.429**		.154
39.Perseverance (task completion)	**(.365)***		**.350**			
40. Social comparison strategies	.222	.302	.249	.155	**.537**	-.189
41. Social adjustability	.163	**.507**	.196		.282	-.122
42. Brain activation	**(.423)***	**.417**				
43. Brain size				.139	**.641**	.302
44. Brain weight				.254	**.641**	.271
45. Expert identification	.208	**.397**			.277	
46. Age limit	.258	**.503**		.186		
47. Early identification	.218	**.598**		.111	.104	
48. Criterion-performance based	.246	**.402**			.285	.194
49. IQ tests	.341	**.639**	.118			
50. Media	.164	**.462**			.311	
51. Deliberate efforts	.286	**.636**		-.107		.109
52. Education provision	.239	**.660**				
53. Enrichment programmes		**.481**	.292	.198	.131	-.103
54. Acceleration programme	.160	**.552**	.104	.199	.164	
55. Limited intervention/provision	.188	**(.298)***	.179	**.235**	.219	.128
56. Curriculum	.254	**.637**	.138		-.125	
57. Parental education	.112	**.444**	.317		.131	.324
58. Parenting style	.140	**.605**	.177			.171
59. Teachers' values	.119	**.559**	.183	.192	.139	
60. Mentorship	.175	**.635**			.125	

Note: Suppression is on item loadings less than .01 and components to extract (6 components). The largest loadings (0.3 and more are selected for interpretation as presented above). Item with loading less than 0.3 would be omitted from further consideration and reported in parenthesis (i.e. item no. 6 and 55).
*This item has high loadings in more than one component and the loadings are slightly different from each other (i.e. item no. 6, 9, 14, 39, 42 and 55).

Thus, an additional principal component analysis was carried out in which the amount of components suppressed is decided based on comparison of eigenvalues obtained in SPSS Version 17 from the first analysis (with no component suppression) with eigenvalues obtained in the Monte Carlo Parallell Analysis. The comparison yields solution based on the amount of components to be suppressed i.e. six components. After examining the thirteen, ten and six component, the six-component solution appeared to have the most meaningful structure.

The six-component solution yields lesser cross-loadings between components as compared to former analyses. Generally, items with high correlations are loaded in many components show salient patterns that could assist interpretation. All these serve as an indicator of a good structure for interpretation. To assist the interpretation of each component based on this third analysis, new tables were extracted from **Table 7.21**.

Component no. 1 consists of 19 items from four dimensions. A close examination in **Table 7.22** shows that two items (i.e. item no. 39 and 42) have the lowest loadings among nineteen items. Also, both have similarly high loadings in other component e.g. for item no. 39: in component no. 1 (.365 loading) and no. 3 (.350 loading); for item no. 42: in component no. 1 (.423 loading) and no. 2 (.417 loading). Therefore, it is decided to drop both items from further consideration since it did not share similar 'meaning relatedness' themes with the rest of items. Items belong to two proposed dimensions -i.e. Cognitive and Attitude dimensions- are retained for further discussion. The two proposed dimensions are merged and later revised. The revised dimension is renamed as **'Discrete characteristics'**.

Table 7.22: Item loadings on component no. 1 of the six-component solution

No	Item	Loading	Proposed dimension	Revised dimension
19	Gifted individuals must be able to demonstrate their abilities	.455	Cognitive	Discrete characteristics
20	Gifted individuals have excellent abilities	.633	Cognitive	
21	Gifted individuals has one or more exceptional abilities	.575	Cognitive	
22	Above average ability is one of the characteristics of giftedness	.562	Cognitive	
23	Gifted individuals are creative	.542	Cognitive	
24	Gifted individuals are endowed with innate untrained abilities	.521	Cognitive	
25	Talented individuals have outstanding mastery of systematically developed abilities	.502	Cognitive	
26	Gifted individuals have extraordinary speed of information processing	.505	Cognitive	
27	Gifted individuals have excellent memory	.637	Cognitive	
28	Gifted students have the ability to balance between skills and tasks given	.610	Cognitive	
29	Gifted individuals are analytical	.637	Attitude	
30	Gifted individuals are critical	.629	Attitude	
31	Gifted individuals are practical	.553	Attitude	
32	Gifted students have high perceptions of their own academic competency	.484	Attitude	
33	Gifted students have superior academic motivation	.580	Attitude	
34	Gifted individuals have high self-confidence	.510	Attitude	
36	Precociousness at early age does predict above average ability	.427	Attitude	
39	Gifted individuals are persevered in task completion	(.365)*	Behaviour	?? (omitted)
42	Gifted individuals has higher brain activation as compared to non-gifted individuals	(.423)*	Biological	?? (omitted)

*This item has high loading in more than one component and the loadings are slightly different from each other (i.e. item no. 39 and 42).

The second component comprises of items from five dimensions as presented in **Table 7.23**. In general, to assist interpretation, items with similarly high loadings in more than one component are omitted. A comparison of item no. 14 in three analyses shows that it has loaded similarly high loadings in more than one component. This shows that religious connotation of gifts or talents as God's given can be reflected in different facets. In this six-component solution, item no. 14 has two similarly highest loadings in component no. 1 (.323 loading) and 2 (.327 loading). Since the revised dimension for component no. 2 is **Future success catalyst**, it makes item no. 14 does not fit into component no. 2. This is because even though God's blessing plays undeniable role in one's life yet the role is very transcendental in general. The item no. 14 also could not fit into component no. 1 either since the revised dimension of component no. 1 deals with 'Discrete characteristics' of gifted and talented individuals. This finding suggests that perhaps 'God's given' view on giftedness is a widely acceptable notion and further exploration might be needed to investigate its elements[150]. In this instance, item no. 14 and 55 are dropped from further discussion.

Table 7.23: Item loadings on component no. 2 of the six-component solution

No	Item	Loading	Proposed dimension	Revised dimension
14	Gifts and talents are given by God	(.327)*	Perception	?? (omitted)
41	Social adjustability is one of the characteristics essential in ensuring later achievement in adulthood for gifted individuals	.507	Behaviour	Future success catalyst
45	Experts identification of gifted students are highly reliable and valid	.397	Assessment	
46	There is no age limit to identify gifted individuals	.503	Assessment	
47	Assessment at early age could provide psychological information about gifted students	.598	Assessment	
48	Criterion-performance based assessments such as National Examination can identify gifted students	.402	Assessment	
49	IQ tests are better predictor in identifying gifted students	.639	Assessment	
50	Media attention helps in identifying gifted children	.346	Assessment	
51	Deliberate efforts and training for gifted students help to sustain and enhance their gifts	.636	Program	
52	The result of educational interventions may vary for different gifted students	.660	Program	

[150] Qualitative data from interview shows that among six participants interviewed, only one mention a gift or talent as God's given. Others did not highlight this religious notion in their response. A further study is suggested to investigate further on this issue.

53	Enrichment programme is better than acceleration programme as students do not have to skip grades	.353	Program	
54	Acceleration programme gives mixed benefits to various gifted students	.378	Program	
55	Gifted individuals can flourish and reach the level of eminence with limited training and environmental stimulation	(.298)*	Program	?? (omitted)
56	Flexible curriculum should be implemented to suit with the needs of gifted students	.637	Program	Future success catalyst
57	Parental education background is correlated with intellectual skills of gifted students	.444	Significant Others	
58	Parenting style is linked with the development and achievement of gifted students in a long term run	.605	Significant Others	
59	Teachers might have different education-related values from the parents of gifted students	.559	Significant Others	
60	Mentorship has positive significant impact on gifted adolescents	.635	Significant Others	

Note: Item with loading less than 0.3 would be omitted from further consideration and reported in parenthesis.

*This item has high loading in more than one component and the loadings are slightly different from each other (i.e. item no. 14 and 55).

The six-component solution merges the dimensions of 'Definition', 'Perception' and 'Cognitive' into the third component (see **Table 7.24**). In particulars, items no. 1 to 5 connote literal and common assumptions on certain issues related to giftedness such as experts in gifted education (item no. 5), classification of gifted students (item no. 3), and definition about giftedness in general (item no. 2). Item no. 16 was originally proposed under the dimension of 'Perception'. Item no. 16: *'Giftedness is defined based on social-contextual factors'* implies how giftedness could be defined and perceived from different aspect i.e. social aspect. Items no. 11 and 18 highlights a key point i.e. 'balance' as a common assumption of gifted individuals in domain(s) specific or psychological aspects (which includes cognitive, affective and social aspects). The convergence of two dimensions into a revised dimension: **'Generic view'** helps to explain the connectedness among items in more meaningful structure.

Table 7.24: Item loadings on component no. 3 of the six-component solution

No	Item	Loading	Proposed dimension	Revised dimension
1	Gifted individuals and talented individuals are similar in their characteristics	.490	Definition	
2	Giftedness is a label given by a group of experts such as teachers to label students with exceptional ability	.434	Definition	
3	Gifted students can be classified as mildly, moderately and highly gifted	.560	Definition	
4	Beinggifted means the gifts or talents possess by a	.508	Definition	

	gifted individual is recognised, accepted and valued by society and culture where he or she belongs			Generic views
5	Experts in gifted education refers to individuals with distinct contribution in gifted education field	.437	Definition	
11	Gifted individuals are cognitively, emotionally and socially well-balanced	.403	Perception	
16	Giftedness is defined based on social-contextual factors such as religious belief and moral values	.464	Perception	
18	Gifted individuals have balance superiority in verbal and mathematics efficacy	.457	Cognitive	

The fourth component (**Table 7.25**) clusters together eight items that originally related to the 'Value', 'Perception', 'Attitude' and 'Behaviour' proposed dimensions. Item no. 9 was omitted because it was loaded in another component too (component no. 6) and thus would not be considered for further discussion. Five items of the proposed dimension -i.e. 'Perception' dimension- were merged with another two items from two different dimensions: 'Attitude' and 'Behaviour'. A close examination of item contents shows that unlike item in 'Generic view' dimension (previous revised dimension), the seven items loaded in this component (minus the omitted item) gauge psychological and social aspects such as performance in psychometric assessments such as IQ tests (item no. 10), academic achievement (item no. 12), social status of a family (item no. 13), potentiality for development (item no. 15) and career attainment (item no. 17). Item no. 37: 'Vulnerability' and item no. 38: 'Peculiarity' share 'meaning relatedness' i.e. behavioural aspect. Even though the contents from item no. 37 and 38 have similar 'meaning relatedness' yet interpretation of behaviour relates to these two aspects: content and context. Content refers to the behaviour or action by an individual whereas context refers to the location of such behaviour is performed which subjected on social values hold by people in that particular society. Thus, in this instance, this finding implies that pre service and in service teachers in my sample seemingly perceive multifaceted psychosocial aspects in their conceptions of giftedness. This lead to a renamed dimension: **Psychosocial characteristics**.

Table 7.25: Item loadings on component no. 4 of the six-component solution

No	Item	Loading	Proposed dimension	Revised dimension
9	Gifted males are predominant in mathematics and science while gifted females are predominant in arts	(.378)*	Value	?? (omitted)
10	Gifted individuals have IQ test scores more than 140	.440	Perception	

12	Gifted individuals could be academic underachievers	.611	Perception	Psychosocial characteristics
13	Familial social economic status (SES) predicts adulthood achievement of gifted individuals	.413	Perception	
15	Gifts are innate while talents are developed	.319	Perception	
17	Gifted students have difficulties in choosing career	.622	Perception	
37	Vulnerability is one of the characteristics of gifted students	.578	Attitude	
38	Gifted individuals exhibit peculiar behaviours	.429	Behaviour	

*This item has high loading in more than one component and the loadings are slightly different from each other (i.e. item no. 9).

Component no. 5 comprises of items from three separate dimensions: 'Attitude', 'Behaviour' and 'Biological' (refer to **Table 7.26**). Item no. 35 and 40 have smaller loadings as compared to item no. 43 and 44 (from same dimension: 'Biological'). Even though item no. 35 and 40 are from two separate dimensions yet it would be re-categorised as 'social' dimension because there are social elements in the item contents of both items. For instance, item no. 35 highlights perfectionism in which entails social values of whom and what make a person to be considered as a perfectionist. Item no. 40 implies an approach by gifted individual when face failure or perform poorly in a task by comparing previous strategies used in social contexts. In this regards, both items have 'meaning relatedness' i.e. social context. In contrast, item no. 43 and 44 indicate the physical features i.e. brain (size and weight). This finding shows two extreme dimensions -social and biological- under one component. Thus, it is decided to combine these two separate dimensions and rename it: **Social/Biological characteristics.**

Table 7.26: Item loadings on component no. 5 of the six-component solution

No	Item	Loading	Proposed dimension	Revised dimension
35	Gifted individuals are perfectionist	.495	Attitude	Social/ biological characteristics
40	Gifted individuals use social comparison strategies to enhance self-efficacy when they thought that they have performed poorly academically	.537	Behaviour	
43	Gifted students have bigger brains	.641	Biological	
44	Gifted students have heavier brains	.641	Biological	

The last component i.e. component no. 6 (refer to **Table 7.27**) has three items from two dimensions: 'Definition' and 'Value'. However, even though item no. 6 has two similarly high loadings (in component no. 1 (.264 loading) and component no. 6 (.287 loading)) and the loading in the last component was saliently different from the other two items. Thus, it is decided to

drop item no. 6 from further interpretation. In this component, two items i.e. item no. 7 and 8 have similarly high loadings and both are from the same proposed dimension: 'Value'. For refinement, the dimension was relabelled as '**Genealogical view'** because it gauges the elements of hereditary as a part of overall conceptions of giftedness.

Table 7.27: Item loadings on component no. 6 of the six-component solution

No	Item	Loading	Proposed dimension	Revised dimension
6	Labelling is essential in identifying gifted students	(.287)*	Definition	?? (omitted)
7	Giftedness is hereditary	.717	Value	Genealogical view
8	Gifted students tend to have equally bright parents	.722	Value	

Note: Item with loading less than 0.3 would be omitted from further consideration and reported in parenthesis. *This item has high loading in more than one component and the loadings are slightly different from each other (i.e. item no. 6).

Summary

The third solution of PCA yields the best pattern structures of the conceptions of giftedness as perceive by pre service and in service teachers in Malaysia. A visual comparison among the three tiers of PCA (see **Appendix 27**) reveals consistencies of some items loaded in the same group from the three solutions[151]. Some items which are loaded in similar components in two previous PCA solutions are suppressed to load in one component in this third PCA solution. For example, 15 items are loaded in one component in the third solution even though all 15 items are loaded in four different components in both previous solutions.

From a close examination of the three tiers of PCA (see **Appendix 27**), it could be summarised that out of 60 items, 39 items are loaded in the same component in all three Principal Component Analyses. This consistency is perceived as a good indicator for the components of conceptions of giftedness and talent among participants. In this instance, from the three analyses, the third analysis is taken as the best analysis because the components are compressed into more meaningful patterns (see **Table 7.28**). Also, to refine the items, only 44

[151] For instance, 39 items are loaded in the same components in the three PCA solutions. All of the items are highlighted in the **Appendix 27**.

items which are loaded in the more than two components and have the highest loading in one specific component are analysed and presented in **Table 7.28** as final findings. There are six dimensions of the conceptions of giftedness and talent from this final analysis. In this refined version, a dimension is changed from social/biological characteristics to biological characteristics. This is because the items represent the social characteristics of giftedness are dropped from this dimension (item no. 35 and 40). The drop is due to inconsistency of item loadings -i.e. item are not grouped in the same components- in three tiers of PCA.

The first dimension, '**Generic Views'** contain items exploring general conceptions of giftedness and talent. The aspects measured under this dimension are as the following:

a) General perception on the gifted and talented individuals in terms of the similar characteristics (item no. 1). This finding shows that participants perceive that gifted and talented individuals belong to different groups and yet they share similar characteristics (which are explored qualitatively in this study).
b) Giftedness comprises of a set of socially acknowledged and valued characteristics. In this instance, it also relates to the perception on the roles of significant others such as teachers and experts in gifted education (item no. 2, 4 ,and 5)
c) General perception on the classification of gifted individuals (item no. 3).

In this dimension, one item (item no. 18) was dropped because it belongs to another proposed dimension, which is Specific (Cognitive) and has a weak link with the rest of the items in this dimension (based on consistency of loading in the other two PCA). This item specifically refers to one of the characteristics of gifted and talented individuals, which is the ability to balance two domains of abilities (verbal and math). This statement is based on studies by Larsson (1986), Wu (2005) and Worrell (2007). These three studies were conducted in different societies and cultures and thus, even though it might not be generalised to another society such as Malaysia yet it shows that a common ground of the conception does exist in some societies.

The second dimension, '**Genealogical Views'** relate to perceptions on hereditary (item no. 7) and parental brilliance (item no. 8). Both items are loaded consistently in three tiers of PCA and thus, it is interpreted that both items belong in the same group or component as previously

proposed in this study (refer to **Chapter 5** for details). Item no. 6 was omitted even though it was loaded in the same component in the third PCA. Looking at the loadings in all three PCA, there is no consistency of loading and thus, this item has weak relation with another item in similar loading.

For the third dimension (**Psychosocial characteristics**), unlike the other two previous dimensions, there are two sub-dimensions in this third dimension. The first sub-dimensions contain three items (item no. 12, 13 and 17) with similar construct which is General (Perception) that was proposed earlier in the initial stage of this study (see **Appendix 27** for details). All three items relate to perceptions on gifted and talented individuals on their academic achievement, influence of familial SES on adulthood achievement and difficulties in choosing career. The second sub-dimension relates to another dimension which is proposed at the initial stage of this study (for item no. 37 and 38). With the two sub-dimensions coexists within this dimension (Perception and Behaviour), it indicates that the conceptions of gifted and talent might not be as robust as it might seem at a glance.

'Discrete characteristics' is coined for the fourth dimension and it relates to the cognitive and affective attributes of gifted and talented individuals. It is called as 'Discrete characteristics' because it relates to some of the characteristics that define gifted and talented individuals based on previous psychological literature (see **Chapter 3** for more discussion on the characteristics of giftedness as presented in various models or theories of giftedness). There are 15 items loaded consistently in the same component in the three tiers of PCA except item no. 33 which only loaded consistently in two PCA. Some of the items (item no. 19 to 28) were proposed as one component (Cognitive) at the initial stage of this study. In addition, item no. 29, 30, 31, 32, 33 and 34 were also grouped in the Affective component. In the third tiers of PCA, both components are grouped together forming another dimension which is called as **'Discrete characteristics'**.

A close examination reveals that there are two sub-dimensions in this fourth dimension. Even though each dimension relates to specific construct, yet it is assumed that both construct might be linked to certain extent. In this instance, one of the possible explanations is both constructs,

cognitive and affective relate to psychological construct in general. In this study, I coined '**Discrete characteristics'** because each characteristic is emphasised variedly in any model or theory of giftedness. For example, item no. 19 is distinctively related to demonstrability which is one of the characteristics of giftedness as proposed by Sternberg and Zhang (1995).

The fifth dimension proposed in this final analysis is '**Biological view**'. There were four items loaded in this component. However, two of the items (item no. 35 and 40) were omitted because both do not share similar constructs with the other two that were consistently loaded in all three tiers of PCA. The two items with the strongest relation are item no. 43 and 44. These two items relate to the physiological aspects of brain such as its weight and size which might be assumed to have link with giftedness. Based on studies in neuroscience especially, for example by Witelson, Kigar et al. (1999) it was found that brain weight does not correlate with intelligence. In similar study by Witelson, Kigar et al. (1999) and in another study by Diamond, Scheibel et al. (1985) on Einstein's brain, it was found that his perietal lobe was smaller as compared to normal population and this might provide some explanation of his superior ability. In this instance, rather than weight, it shows that specific lobes in brain do relate with specific functions or abilities (Jung and Haier, 2007). In addition, in another study by Witelson, Beresh et al. (2006) it was found that cerebral volume was positively correlated with general verbal ability. Other than weight, size, volume or lobes, brain activation is another aspect worth to be looked at. This is because even though, the physiological aspects of a brain such as size and weight could be attributed to genetic, yet brain activation is correlated with environmental stimulation (Diamond and Hopson, 1999). Studies have shown that brain activation of mathematically gifted individuals is different from normal individuals (Singh and O'Boyle, 2004; O'Boyle, Cunningston et al., 2005). In this instance, findings from various studies present different aspects of the brain and thus, misconception might easily be developed if it is based on general understanding of the brain functions. In this study, participants' conceptions on the biological view of giftedness –i.e. brain- are explored and the findings suggested that participants do perceive that gifted individuals have different brain size and weight as compared to non gifted individuals.

'**Future success catalyst'** (the sixth dimension) comprises of items from three previously proposed dimensions ('Assessment', 'Programme' and 'Significant Others'). The suppression of

fourteen items into one component represent a more generic dimension as compared to the previously proposed three components (see **Appendix 27** for details). In addition, the suppression also provides a clear cut-off to any item which seems not to have strong link with the rest of the items. It is coined as '**Future success catalyst'** because the three components proposed ('Assessment', 'Programme' and 'Significant Others') relate to influencial aspects in the development of gifted and talented individuals. In this dimension, there were sixteen items loaded. Thirteen items were consistently loaded in four different components in two tiers of PCA (item no. 45, 46, 47, 49, 50, 51, 53, 54, 56, 57, 58, 59 and 60). Three items -i.e. item no. 41, 48 and 55- were not consistently loaded in similar components in the three analyses and thus were omitted in this dimension.

Table 7.28: Conception of giftedness and talent by Malaysian pre service and in service teachers

No	Item	Loading	Proposed dimension	Revised dimension
1	Gifted individuals and talented individuals are similar in their characteristics	.490	Definition	Generic views (5 items)
2	Giftedness is a label given by a group of experts such as teachers to label students with exceptional ability	.434	Definition	
3	Gifted students can be classified as mildly, moderately and highly gifted	.560	Definition	
4	Being gifted means the gifts or talents possess by a gifted individual is recognised, accepted and valued by society and culture where he or she belongs	.508	Definition	
5	Experts in gifted education refers to individuals with distinct contribution in gifted education field	.437	Definition	
7	Giftedness is hereditary	.717	Value	Genealogical views (2 items)
8	Gifted students tend to have equally bright parents	.722	Value	
12	Gifted individuals could be academic underachievers	.611	Perception	Psychosocial characteristics (6 items)
13	Familial social economic status (SES) predicts adulthood achievement of gifted individuals	.413	Perception	
15	Gifts are innate while talents are developed	.319	Perception	
17	Gifted students have difficulties in choosing career	.622	Perception	
37	Vulnerability is one of the characteristics of gifted students	.578	Attitude	
38	Gifted individuals exhibit peculiar behaviours	.429	Behaviour	
19	Gifted individuals must be able to demonstrate their abilities	.455	Cognitive	
20	Gifted individuals have excellent abilities	.633	Cognitive	
21	Gifted individuals has one or more exceptional abilities	.575	Cognitive	
22	Above average ability is one of the characteristics of giftedness	.562	Cognitive	
23	Gifted individuals are creative	.542	Cognitive	

24	Gifted individuals are endowed with innate untrained abilities	.521	Cognitive	Discrete characteristics (16 items)
25	Talented individuals have outstanding mastery of systematically developed abilities	.502	Cognitive	
26	Gifted individuals have extraordinary speed of information processing	.505	Cognitive	
27	Gifted individuals have excellent memory	.637	Cognitive	
28	Gifted students have the ability to balance between skills and tasks given	.610	Cognitive	
29	Gifted individuals are analytical	.637	Attitude	
30	Gifted individuals are critical	.629	Attitude	
31	Gifted individuals are practical	.553	Attitude	
32	Gifted students have high perceptions of their own academic competency	.484	Attitude	
33	Gifted students have superior academic motivation	.580	Attitude	
34	Gifted individuals have high self-confidence	.510	Attitude	
43	Gifted students have bigger brains	.641	Biological	Biological characteristics
44	Gifted students have heavier brains	.641	Biological	
46	There is no age limit to identify gifted individuals	.503	Assessment	Future success catalyst (13 items)
47	Assessment at early age could provide psychological information about gifted students	.598	Assessment	
49	IQ tests are better predictor in identifying gifted students	.639	Assessment	
50	Media attention helps in identifying gifted children	.346	Assessment	
51	Deliberate efforts and training for gifted students help to sustain and enhance their gifts	.636	Program	
52	The result of educational interventions may vary for different gifted students	.660	Program	
53	Enrichment programme is better than acceleration programme as students do not have to skip grades	.353	Program	
54	Acceleration programme gives mixed benefits to various gifted students	.378	Program	
56	Flexible curriculum should be implemented to suit with the needs of gifted students	.637	Program	
57	Parental education background is correlated with intellectual skills of gifted students	.444	Significant Others	
58	Parenting style is linked with the development and achievement of gifted students in a long term run	.605	Significant Others	
59	Teachers might have different education-related values from the parents of gifted students	.559	Significant Others	
60	Mentorship has positive significant impact on gifted adolescents	.635	Significant Others	

7.4 Independent t-tests

Independent t-tests are used to compare the mean score between two groups of participants. In this study, comparisons of means scores between groups are based on these criteria: group type (In service, Pre service), gender (Male, Female) and subject taken (Taken, Not Taken) which is meant to answer the **Research Question no. 3: Is there any difference in the conception of**

giftedness and talent among pre service and in service teachers in Malaysia? There are three aspects explored to answer this main question: 1) group type, 2) gender and 3) subject taken.

First, to ascertain if there is difference among pre service and in service teachers in terms of their conception of giftedness, a null hypothesis is proposed.

H_{o1}: There is no difference between pre service and in service teachers in terms of their conception of giftedness and talent

Based on an independent-samples t-test conducted to compare the scores on conception of giftedness for In service and Pre service teachers (see **Table 7.29**), it was found that there was significant difference in scores for In service (*M* = 210.32, *SD* = 27.64) and Pre service (*M* = 205.89, *SD* = 29.64); *t* (1176) = 2.65, *p* =.008 (two-tailed). The magnitude of the differences in the means (mean difference = 4.427, 95% CI: 1.151 to 7.704) was quite large even though the effect size *r* = 0.077 was rather small. Looking at the effect size result, it could be concluded that even though the difference between In service and Pre service teachers is significant, yet the difference might be small.

Table 7.29: Independent t-test (Group type: Pre service and in service)

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Conception	Equal variances assumed	1.723	.190	2.651	1176	.008	4.427	1.670	1.151	7.704
	Equal variances not assumed			2.638	1123.601	.008	4.427	1.679	1.134	7.721

Note: p ≤ 0.05

In addition to independent sample t-test to measure the difference between two groups of teachers i.e. pre service and in service teachers, another independent t-test was conducted to uncover the differences of perceived conceptions of giftedness according to each item by both groups. Each item is closely examined to uncover the different perceived conceptions as held by teachers. As shown in Table 7.29 the findings from independent sample t-test demonstrated a number of significant differences between pre service and in service teachers in their perceived conceptions of giftedness and talent. The differences could be seen from twenty four items which constitute a varying array of perceived aspects related to giftedness. In general, pre service and in service teachers are significantly different on these perceived generic aspects of giftedness: parental resemblance ($t=3.48$, $p < 0.05$), gender predominance ($t=2.77$, $p < 0.05$), well-balanced ($t=2.75$, $p < 0.05$), God's given ($t=-2.93$, $p < 0.05$), and social contextual definition ($t=3.16$, $p < 0.05$).

In addition, their perceived conceptions of giftedness are also significantly different on the perceived characteristics of giftedness such as innate ability ($t=-2.88$, $p < 0.05$), memory ($t=2.77$, $p < 0.05$), balance of skills and task ($t=5.24$, $p < 0.05$), practical ($t=3.18$, $p < 0.05$), critical ($t=2.05$, $p < 0.05$), motivation ($t=2.64$, $p < 0.05$), self-confidence ($t=3.99$, $p < 0.05$), perfectionism ($t=2.58$, $p < 0.05$), precociousness ($t=3.07$, $p < 0.05$), perseverance ($t=2.57$, $p < 0.05$), social comparison strategy ($t=3.11$, $p < 0.05$), and social adjustability ($t=2.09$, $p < 0.05$).

Other perceived characteristics of giftedness which teachers view differently are related to biological aspects such as brain activation ($t=2.19$, $p < 0.05$), brain size ($t=3.04$, $p < 0.05$) and brain weight ($t=2.53$, $p < 0.05$), program for enhancing gifts and talents such as enrichment ($t=3.23$, $p < 0.05$) and acceleration ($t=2.67$, $p < 0.05$) and also importance of significant other such as teachers' values ($t=2.04$, $p < 0.05$) and mentorship ($t=3.26$, $p < 0.05$).

Table 7.30: Independent t-test for each item (In service and pre service teachers)

	In service teachers						Pre service teachers					Independent t-test (in service and pre service teachers	
Descriptions	N	Min	Max	M	SD	Descriptions	N	Min	Max	M	SD	t	Sig. *(2-tailed)
1.Similar characteristics	632	1	5	3.12	1.03	1.Similar characteristics	545	1	5	3.16	1.01	-0.74	0.46
2. Labelling by experts	632	1	5	3.83	0.90	2. Labelling by experts	546	1	5	3.81	0.98	0.451	0.652
3. Different classification (levels)	631	1	5	3.43	0.99	3. Different classification (levels)	545	1	5	3.39	1.09	0.703	0.482
4. Social functions	632	1	5	3.80	0.84	4. Social functions	546	1	5	3.71	0.95	1.803	0.072
5. Experts (definition)	632	1	5	3.70	0.92	5. Experts (definition)	546	1	5	3.61	1.01	1.554	0.121
6. Importance of labelling	632	1	5	3.58	0.95	6. Importance of labelling	543	1	5	3.54	1.05	0.681	0.496
7. Hereditary	632	1	5	2.81	0.97	7. Hereditary	546	1	5	2.73	1.03	1.409	0.159
8. Resemblance (Parental)	631	1	5	2.85	0.97	8. Resemblance (Parental)	546	1	5	2.65	1.00	3.48	**0.001**
9. Gender predominance	632	1	5	3.02	1.03	9. Gender predominance	543	1	5	2.84	1.16	2.777	**0.006**
10. IQ scores	631	1	5	3.37	1.15	10. IQ scores	543	1	5	3.35	1.29	0.301	0.763
11. Well-balanced	632	1	5	3.36	0.97	11. Well-balanced	545	1	5	3.19	1.08	2.748	**0.006**
12. Academic achievement	632	1	5	2.78	0.95	12. Academic achievement	545	1	5	2.77	1.02	0.314	0.753
13. SES	631	1	5	3.04	0.95	13. SES	545	1	5	2.94	1.08	1.802	0.072
14. God's given	632	1	5	4.09	1.02	14. God's given	544	1	5	4.26	1.01	-2.929	**0.003**
15. Nature VS nurture	632	1	5	3.66	1.03	15. Nature VS nurture	542	1	5	3.69	1.11	-0.477	0.633
16. Social contextual definition	632	1	5	3.26	1.03	16. Social contextual definition	545	1	5	3.06	1.14	3.158	**0.002**
17. Career path	632	1	5	2.82	1.03	17. Career path	545	1	5	2.86	1.06	-0.706	0.48
18. Balance superiority	632	1	5	3.38	1.03	18. Balance superiority	545	1	5	3.28	1.15	1.611	0.108
19. Demonstrability	629	1	5	3.62	1.03	19. Demonstrability	540	1	9	3.69	1.03	-1.002	0.317
20. Excellent abilities	632	1	5	3.79	0.90	20. Excellent abilities	546	1	5	3.86	0.94	-1.224	0.221
21. More than one domain	632	1	5	3.70	0.89	21. More than one domain	545	1	5	3.67	1.08	0.631	0.528

22. Above average ability	631	1	5	3.69	0.98		22. Above average ability	546	1	5	3.73	1.03	-0.561	0.575
23. Creative	632	1	5	3.54	0.98		23. Creative	546	1	5	3.47	1.16	1.141	0.254
24. Innate ability	632	1	5	3.69	0.93		24. Innate ability	546	1	5	3.85	0.97	-2.888	**0.004**
25. Systematically developed	631	1	5	3.78	0.84		25. Systematically developed	545	1	5	3.78	1.01	0.057	0.955
26.Information processing (speed)	632	1	5	3.74	0.96		26.Information processing (speed)	546	1	5	3.84	1.03	-1.601	0.11
27. Memory	632	1	5	3.92	0.88		27. Memory	546	1	5	3.76	1.13	2.769	**0.006**
28. Balance of skills and tasks	632	1	5	3.74	0.91		28. Balance of skills and tasks	546	1	5	3.42	1.16	5.242	**0.00**
29. Analytical	631	1	5	3.53	1.05		29. Analytical	545	1	5	3.45	1.20	1.215	0.225
30. Critical	632	1	5	3.62	0.98		30. Critical	546	1	5	3.49	1.19	2.049	0.041
31. Practical	632	1	5	3.52	1.01		31. Practical	546	1	5	3.31	1.18	3.182	**0.002**
32.Self-perception (academic competency)	632	1	5	3.67	0.93		32.Self-perception (academic competency)	545	1	5	3.61	1.09	1.055	0.292
33. Motivation	632	1	5	3.67	0.90		33. Motivation	546	1	5	3.51	1.10	2.635	**0.009**
34. Self-confidence	632	1	5	3.75	0.93		34. Self-confidence	546	1	5	3.50	1.16	3.986	**0.00**
35. Perfectionist	631	1	5	3.26	1.05		35. Perfectionist	543	1	5	3.09	1.24	2.583	**0.01**
36. Precociousness (early age)	632	1	5	3.56	0.93		36. Precociousness (early age)	546	1	5	3.38	1.13	3.067	**0.002**
37. Vulnerability	632	1	5	3.23	1.01		37. Vulnerability	546	1	5	3.19	1.06	0.563	0.573
38. Peculiar behaviours	631	1	5	3.30	0.91		38. Peculiar behaviours	546	1	5	3.34	1.12	-0.699	0.485
39.Perseverance (task completion)	632	1	5	3.47	0.95		39.Perseverance (task completion)	546	1	5	3.32	1.18	2.574	**0.01**
40. Social comparison strategies	632	1	5	3.44	1.00		40. Social comparison strategies	545	1	5	3.24	1.23	3.113	**0.002**
41. Social adjustability	632	1	5	3.63	0.92		41. Social adjustability	545	1	5	3.51	1.15	2.091	**0.037**
42. Brain activation	632	1	5	3.84	0.93		42. Brain activation	546	1	5	3.71	1.12	2.199	**0.028**
43. Brain size	632	1	5	2.74	1.11		43. Brain size	546	1	5	2.53	1.24	3.035	**0.002**
44. Brain weight	632	1	5	2.60	1.09		44. Brain weight	546	1	5	2.43	1.18	2.533	**0.011**
45. Expert identification	632	1	5	3.40	1.04		45. Expert identification	546	1	5	3.28	1.14	1.867	0.062
46. Age limit	632	1	5	3.64	0.93		46. Age limit	546	1	5	3.65	1.09	-0.136	0.892
47. Early identification	632	1	5	3.63	0.93		47. Early identification	545	1	5	3.66	1.07	-0.592	0.554

48. Criterion-performance based	632	1	5	3.43	0.96		48. Criterion-performance based	546	1	5	3.51	1.05	-1.35	0.177
49. IQ tests	632	1	5	3.83	0.87		49. IQ tests	546	1	5	3.82	1.05	0.337	0.736
50. Media	632	1	5	3.39	0.96		50. Media	546	1	5	3.39	1.12	-0.006	0.995
51. Deliberate efforts	631	1	5	3.90	0.82		51. Deliberate efforts	546	1	5	3.97	0.97	-1.159	0.247
52. Education provision	632	1	5	3.75	0.95		52. Education provision	546	1	5	3.79	1.10	-0.686	0.493
53. Enrichment programmes	632	1	5	3.66	0.95		53. Enrichment programmes	546	1	5	3.45	1.23	3.231	**0.001**
54. Acceleration programme	632	1	5	3.71	0.94		54. Acceleration programme	546	1	5	3.55	1.14	2.674	**0.008**
55. Limited intervention/provision	631	1	5	3.48	0.98		55. Limited intervention/provision	546	1	5	3.40	1.14	1.246	0.213
56. Curriculum	632	1	5	3.93	0.81		56. Curriculum	546	1	5	3.97	1.03	-0.682	0.496
57. Parental education	632	1	5	3.56	0.92		57. Parental education	546	1	5	3.45	1.12	1.874	0.061
58. Parenting style	632	1	5	3.71	0.91		58. Parenting style	546	1	5	3.66	1.09	0.939	0.348
59. Teachers' values	631	1	5	3.63	0.89		59. Teachers' values	546	1	5	3.50	1.19	2.039	**0.042**
60. Mentorship	632	1	5	3.80	0.84		60. Mentorship	546	1	5	3.61	1.15	3.264	**0.001**

Second, an independent-samples t-test was conducted to compare the scores for male and female (see **Table 7.30**). In this vein, pre service and in service teachers are regarded as one single group and thus, the comparison is made based on the gender of both groups. To determine if there is difference among male and female pre service and in service teachers in terms of their conceptions of giftedness and talent, a null hypothesis is proposed.

H_{o2}: There is no difference between male and female teachers (i.e. pre service and in service teachers) in terms of their conception of giftedness and talent

There was no significant difference in scores for male (M = 209.26, SD = 30.20) and female (M = 207.89, SD = 27.992); t (1176) = .744, p = .457 (two-tailed). The magnitude of the difference in the means (mean difference = 1.364, 95% CI: -2.233 to 4.962) was quite large. An analysis of effect size was conducted and the result shows the effect size was small, r = 0.021. From the result of effect size, it could be concluded that even though there was no significant difference between the male and female teachers, yet the similarity of their perceived conception of giftedness and talent might be small and not that apparent.

Table 7.31: Independent t-test (Gender)

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Conception	Equal variances assumed	2.316	.128	.744	1175	.457	1.364	1.834	-2.233	4.962
	Equal variances not assumed			.721	603.7	.471	1.364	1.892	-2.352	5.080

Note: p ≥ 0.05
*One participant did not state the gender.

Third, I attempted to investigate the difference between participants (e.g. pre service and in service teachers) who have taken or not taken subjects related to gifted and talented. On average, the mean scores of participants who have not taken any subject related to gifted

and talented (*M* = 209.43, *SD* = 27.94) were slightly higher than participants who have not taken any subject (*M* = 206.06, *SD* = 29.88) (see **Table 7.31**). To ascertain if there is difference between the participants who have taken or not taken subjects related to gifted and talented, a null hypothesis is proposed.

H_{o3}: There is no difference between participants (i.e. pre service and in service teachers) who have taken or not taken subject related to gifted and talented in terms of their conception of giftedness and talent

An analysis of t-test shows that the difference was not significant t (1176) = -1.918, p = .055 (two-tailed). The magnitude of the difference in the means (mean difference = -3.368, 95% CI: -6.813 to 0.077) was large. An analysis of size effect was conducted and the result shows the effect size was small, *r* = 0.055. Like previous results (comparison between type of groups and gender), the effect size result is small. In this instance, even though from t-test result indicates there is no difference between those who have taken any subject and those who have not taken any subject, yet it could be concluded that the similarity between those two groups might be small. In this regards, quantitative data could not provide any extra information in terms of the differences and similarities of their perceived conception of giftedness and talent. Therefore, qualitative data is used to uncover the differences and similarities that teachers might hold.

Table 7.32: Independent t-test (Subject taken)

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Conception	Equal variances assumed	.920	.338	-1.918	1176	.055	-3.368	1.756	-6.813	.077
	Equal variances not assumed			-1.878	773.914	.061	-3.368	1.793	-6.887	.152

Note: p ≥ 0.05

Summary

In summary, from three separate independent t-tests, it was found that there are no consistencies of findings among the groups: group type, gender and subject taken. In the first analysis, it was found that there is significant difference between pre service and in service teachers in terms of their conception of giftedness and talent in general. However, it is unknown in what aspects the difference might exist and thus, these aspects are explored qualitatively later on in **Chapter 8**. For the second analysis, it was found that there is no significant difference between female and male participants. Lastly, even though it is hypothesised that there might be difference between the group who has taken and has not taken any subject about giftedness, the result did not show any difference between both groups statistically. In this instance, subjects offered in the institutes of teacher education and universities might not influence teacher's' conception of giftedness and talent in greater extent.

7.5 Conclusion

From the three tiers of Principal Component Analyses, it could be summarised that the conception of giftedness and held by pre service and in service teachers are multifaceted. In short, the pattern structures of conception of giftedness and talent are diverse and messy to certain extent. In this instance, it shows that in general, teachers' perceived conceptions of giftedness and talent could be assumed to be organised and structured. Yet, in this study, it was found that the perceived conception of giftedness and talent as teachers hold is less structured. It was discovered that within some dimensions, there were sub-dimensions that coexist. This indicates that the component does not have a clean pattern structure. In this instance, it could be concluded that the components of the pattern structures as a whole are not robust. This finding provides an indication that to have a clear and robust conception of giftedness and talent might be almost impossible and too idealistic.

However, to assess the differences between pre service and in service teachers based on three aspects, independent t-test was used. To assess the difference between those two groups, statistically both groups are different. However, there were no differences between male and female teachers as well as those who have taken and not taken subjects related to giftedness that they have taken during teacher training. In the following chapter, I shall present the third part of the findings of this study (qualitative findings).

Chapter 8: Findings of main study - Qualitative (Part C)

8.1 Introduction

In this chapter, I shall illustrate based on responses from semi structured questionnaires and interviews how participants described their conceptions of giftedness under several headings. Each heading is based on question asked and treated as a major theme. The themes are derived from participants' responses in semi structured questionnaires and interviews. To assist discussion, I selected only the most relevant excerpts from the data to be included in the thesis. It is aim that the excerpts could provide readers better insights on the analysis process as well as interpretation of overall data.

Also, I presented the discussion in this chapter based on research questions posed (refer to **Chapter 5** for details). In this study, three levels of codes are used (refer to **Appendix 28**). Level I codes consist of excerpts from participants' responses from semi structured questionnaire and interviews. For Level II codes, it is labelled as 'constituent themes'. Each code is based on a common conception from one or more than one participants. To ensure its reliability, the reliability of these codes are tested using inter-rater reliability measure (refer to **Chapter 6 – Section 6.7** for details). In addition, Level III consists of major themes which are constructed from the Level II coding that serve as sub-headings in the discussion presented in this chapter.

The organisation of the main and constituent themes can be seen in **Appendix 28**. As structured analysis involves me to interpret the meaning of the data, I include selected illustrative quotes that I excerpted from participants responses in semi structured questionnaires and interviews to enable readers to reflect participants views from their own actual words.

8.2 Research question no. 1: What is the conception of giftedness and talent among pre service and in service teachers in Malaysia?

To begin with, even though there were only six participants involved in this qualitative exploration, the participants' responses to the question of 'What is the conception of gifted

and talented?' revealed a common understanding of gifted and talented individuals although each participant had a unique way of expressing this[152]. A summary for **Section 8.2.1** and **8.2.2** is presented at the end of **Section 8.2.2** to illustrate overall conception of gifted and talented among pre service and in service teachers in Malaysia. From the findings, it could be concluded that teachers perceive gifted individuals are different from talented individuals. The notion that gifted is different from talented is similar with the proposition by Gagne (2004). However, as previously discussed in **Chapter 2**, Gagne's (2010) latest proposition considers gift and talent as similar construct and thus, gifted and talented is regarded as a unitary term (see **Chapter 2** for detail discussion and **Appendix 6** for summary of Gagne's proposition).

8.2.1 Who are gifted individuals? What are the characteristics of gifted individuals?: An exploration

In this study, teachers' perceptions of gifted individuals are explored. The themes that derived from the qualitative data serve as headings in this section. There are nine themes under this section.

8.2.1.1 Giftedness means having superior ability or abilities

In the literature, the term 'above average ability (or abilities)' is used frequently (See **Chapter 2** for discussion of model or theory of giftedness). Superior ability is the term used by participants in this study which could be used interchangeably with the term 'above average ability'. It could be assumed that the term 'superior ability (or abilities) is more general whereas the term 'above average ability (or abilities) is more specific in which the latter proposes a cut-off point in certain level for one to be considered as gifted. The latter proposition could mean that there are different levels of ability (or abilities) such as below

[152] To answer this research question, I broke it into two parts. First, I attempted to explore the conception of giftedness as perceived by participants by posing three questions in the semi structured questionnaire and interview (the main research instrument):1) What do you understand about giftedness?, 2) What are your conceptions of gifted individuals? And 3) In your opinion, what are the characteristics of gifted individuals? Second, I attempted to investigate the conceptions of talented as perceived by participants. The questions posed in the research instruments -i.e. semi structured questionnaire and interview- are: 1) What are your conceptions of talented individuals? And 2) In your opinion, what are the characteristics of talented individuals?

average, average and above average as suggested in studies like by Nokelainen et al. (2007) and Mate (2009).

In a study by Mate (2009), she compared the cases of ten gifted individuals with IQ scores more than 180. Even though she only specified her samples with the upper range of intelligence, yet this shows that there are differentiations of intelligence levels based on IQ scores. However, even though that there is no agreement to define what each level means, yet scores from psychometric assessments such as IQ tests (Jensen, 1980; Sternberg and Detterman, 1986) and comparison with peer group performance (Gagné, 1985; Gagné, 2010a) are among instances where performance levels are hierarchically defined and imposed.

In literature, the terms 'above average' or 'superiority' sometimes are used interchangeably with other terms such as 'excellent'. For instance, excellent is one of the characteristics of giftedness as proposed by Sternberg and Zhang (1995) in their pentagonal theory of giftedness. In contrast, above average is proposed by Renzulli (1978) in his triarchic theory of giftedness. Stern (1911) used the term 'supernormality' to refer to excellent ability (or abilities) in which it is '*not something qualitatively sui generis but the possession in quantitatively superior forms of capacities that are generally exhibited by individuals at large*' (p. 145). However, Renzulli nor Sternberg and Zhang specify any level of excellence in their theories, because their propositions state that giftedness relates to social or cultural values. What is highly valued in one society might not be highly valued in other society and thus, any standard or level of excellence is determined by a society. This is in line with what Freeman (2005) proposed that to be gifted relies on societal confirmation and values on gifted and talented individuals and their extraordinary ability (or abilities). In addition, a society determines what and how gifted and talented individuals could flourish and develop in environments that stimulate and enhance their gifts or talents (Csikszentmihalyi and Robinson, 1986; Freeman, 2005; Sternberg, 2007).

In this study, two of the participants' notions on superior ability are revealed in the data. For example, in the semi structured questionnaire, PS2F defined a gifted individual as 'an individual who has extraordinary ability (or abilities) in a field and usually in mathematics and science'. In an interview later on, she further elaborated that

"The gifted individuals have the characteristics… ***having ability that different from normal people.*** (PS2F 16 May 2009).

PS2F's answers in the questionnaire showed her personal view in which she defined gifted individuals are usually excelled in two fields i.e. mathematics and science (second characteristic of gifted individual i.e. domain specific). However, her response in the interview is more general than in semi structured questionnaire. In her response, 'different' does not only refer to the types of ability that gifted individual might have solely but also relate to ability in hierarchical level. This could be reiterated from the word 'extraordinary ability' that she used in semi structured questionnaire. Looking at her responses from semi structured questionnaire and interview responses might reveal that she perceives gifted individuals as those who have extraordinary ability in one specific or more than one domain especially in mathematics and science.

Unlike PS2F who uses the term 'extraordinary ability' specifically to refer to excellent ability, IS3F refers excellent ability as 'above average' to show her perception on a certain level of performance that signifies one to be gifted. She said that gifted students refer to 'students who are above average' (27 June 2009). In her answers to the semi structured questionnaire, she elaborated that with the above average ability that gifted students possess, learning process might seem easier for them. In this instance, IS3F equates having above average ability with ability to learn thing faster.

8.2.1.2 To be gifted means to be excellent in certain field or domain (domain specific)

As proposed by researchers such as Sternberg and Zhang (1995), excellence in certain field or domain is perceived as one of the characteristics of giftedness. To some extent, excellent ability or abilities are usually linked with performance in certain domain such as mathematics and science as perceived by PS2F that

"They have that extra, may be ***special ability in different field****, not only in certain aspect"*. (PS2F 16 May 2009).

This conception of excellence in a domain could be exemplified also by PS1M's words:

*"Gifted students can be said as '**excellent in academic**'"* (PS1M 23 June 2009).

PS1M's response is similar with a proposition by Freeman (2004). According to Freeman (2004) gifted denotes exceptionality of performance in a specific domain or more varied domains. In specific, exceptionality on a domain also relates to social values (Freeman, 1979; Sternberg and Zhang, 1995; Csikszentmihalyi et al., 1997; Freeman, 2005). In this instance, the chance for individuals with an exceptional ability in a domain highly valued in a society to be recognised and given appropriate training is higher than another individual with gifts or talents that are not highly valued.

8.2.1.3 Peer comparison

In any assessment, to certain extent a form of comparison is exerted to find similarities or differences of performance by individuals. From one of IS1F responses, she illustrated that to be gifted is not just in certain domain specific such as mathematics (she mentioned mathematics as an example) but also it is comparable to peer group's ability (or abilities). She exemplified that

*"For example, if he/she is **gifted in mathematics as compared to other students, he/she**[153] **is more outstanding** in that sense"* (IS1F 4 June 2009).

The extraordinary ability or abilities in specific domain is based on age-peers' comparison as stated by IS1F is similar with what Gagné (2004) proposed. In general, in this instance, giftedness relates to 'content' i.e. domain as well as 'context' i.e. society (where the comparison takes place).

[153] In Malay language, the third person singular pronoun for male or female is the same i.e. *dia*. Therefore, in this thesis, for the translated version of participants' responses, the pronoun such as he or she will be written as he/she because there is no indication of specific gender used by participants in their responses.

8.2.1.4 Uniqueness

Uniqueness could be interpreted as unusual attribute of gifted individual in performing a task. It could also mean that an attribute is rare as proposed by Sternberg and Zhang (1995). One of the ways to confirm that an attribute or performance is rare is through peer comparison as highlighted by some theorists like Gagné (2004). As an example, to solve a mathematical problem using specific approaches that are taught formally in school could be a common thing. In this vein, in most cases, those formally taught approaches might be well known as compared to others. Therefore, to use an approach to solve a mathematical problem using unusual equation might be considered as unique or rare. This is what has been explained by IS2F in describing her notion of 'uniqueness' in gifted students. She began by saying

"Because normally, ***they do something not normal student can do****. When they perceive something to solve a problem, they will* ***work in different ways*** *as well"* (IS2F 23 June 2009)

She also elaborated that gifted individuals are unique in the way that they do things unlike non gifted individuals in an interview. As an example, she described an incident while undergoing her teaching training in which a lecturer posed an algebra question. During a discussion on possible approaches to solve the problem, she illustrated that her lecturer demonstrated an approach that none of them ever used. She was amazed with the different approach and considered it as a 'gifted way'. She said that

"I think that one is the ***gifted way (approach – my comment) in which not everyone can see what they see****"* (IS2F 23 June 2009).

She stated that her lecturer commented the approach that he showed them is easier than any approach that they used or knew. To emphasise this aspect, she repeated what her lecturer has said previously: 'You are using a fuzzy method. But actually, you can solve it in easier way' (IS2F23 June 2009). She lamented that she still could not understand how her lecturer did it even though they have further discussion on the approach by saying 'I can't solve it like what he sees (the way he solves it – my comment) like what he tried to solve in class later' (IS2F23 June 2009).

Other than 'unusual way of doing things' as stated by IS2F, uniqueness could also be interpreted as having different cognitive activities such as thinking as exemplified by PS3F's words who wrote (in semi structured questionnaire) that 'gifted individuals have different ways in having their mind works' (PS3F 28 May 2009). Difference in thinking could be attributed with how the brain is hardwired as proposed by Diamond and Hopson (1999). According to Diamond and Hopson (1999) brain branching[154] in the critical period of development would determine how one brain will be more active when completing a task or engaging in a certain activities. In this instance, brain activation would influence the way or how fast we react to an environmental stimulus. Even though brain activation for certain development such as language is hardwired in early childhood, yet 'deliberate practice' as proposed by Ericsson et al. (1993) would determine individual eminence in later years.

8.2.1.5 Natural predisposition

Like intelligence, the issue of nature versus nurture in giftedness is always perplexing as there are various biological as well as environmental factors influencing it. When participants were asked about the characteristics of gifted individuals, many of them stated that giftedness is inborn. As an example, PS2F described gifted individuals 'are those who are given special ability' (PS2F 16 May 2009) in her written response in the semi structured questionnaire. When asked to elaborate further in an interview, she stated that gifted individuals are born with gifts and she feels unsure whether a gift could be inherited from parents. In this instance, 'given' is interpreted as inborn even though in general, it could also mean God's blessing (if she uses the term in religious context). Since she did not mention specifically that gifts are God's blessings as compared to IS1F (refer to **Section 8.2.17**), I shall not extend my interpretation of her response in relation to religious context. When probed further, PS2F emphasised that gifts are 'not necessarily inherited'. In this instance, her notion on this issue could be interpreted as her perception of gifts as innate means that gifted individuals might be born with it but gifts are not necessarily inherited from one's parents.

[154] Brain branching refers to a brain enhancement process (in terms of its activation) due to experience or stimulation that one might receive from environment. According to Diamond and Hopson (1999) brains neurons 'grow, change shape or shrink as a person experiences the world' (p. 21).

In her response on the semi structured questionnaire, IS3F reflected that gifted students are blessed with 'inborn gift in them which makes the learning process easier' (IS3F 27 June 2009). In this vein, the ability to learn things faster is considered as an attribute of being gifted.

Looking at participants' responses, it could be concluded that even though there is innate aspect related to giftedness, there are external aspects that play role in how giftedness is perceived in different society or culture as each society might emphasis and value giftedness and a gift differently. According to Wu (2005) in Chinese literature, innate ability is deemphasised as compared to talented performance. Wu also contends that hard work is highly emphasised in Chinese culture and thus, even though one's ability is innate, one still needs to work hard in order to be excellent. However, such proposition is not found in this study from participants' responses.

8.2.1.6 Heritability

One of the major proponents of heritability was Francis Galton. In his book, Galton (1869) proposed that giftedness is heritable. His proposition is similar and can be found in other cultures such as in certain part of Africa among Shona and Ndebele societies (Ngara, 2006; Mpofu et al., 2007) as well as in Philippine among Tagalog-Speaking Filipinos (Wong-Fernandez and Bustos-Orosa, 2007). According to Wong-Fernandez and Bustos-Orosa (2007) there is a saying '*Kung ano ang puno, ay siyang bunga*' (whatever the tree is, so shall its fruit be) that is highly laden with a belief that gifted individuals inherit and have similar characteristics as parents. Similarly, in Malay culture, there are proverbs that depict genetic predisposition of a child from parents. For examples,

- '*bagaimana acuan, begitulah kuihnya'* (If such is the mould, such will the cake be)
- '*bapa borek, anak rintik*' (Like father, like son)

The first adage refers to inherent qualities such as physical features and to some extent, intelligence too. In this instance, the adage is general with no specification of attribution to either father or mother. It denotes general perception on certain attributes of a child which could be attributed to his/her parents. In contrast, the second adage is more specific in which attribution is more on the father. In Malay culture, the second adage is used

commonly to refer to behavioural characteristics of a child which resemble his/her father such as the way a child talks or walks. In Malaysia, the role of patriarch in a Malay society is still prevalent and therefore, children behavioural attributes are usually ascribed to father, rather than mother.

In addition, a part of Malay culture, in a traditional healing method, the healer known as *pawang* or *bomoh* is perceived as having extraordinary ability to heal that was perceived usually as inherited. In this instance, to possess the ability to heal illnesses is perceived as having a transmitted gift from one generation to another. This could be found in a book by Skeat (1900) that provides illustration of this Malay belief in details. However, it should be noted that the writing by Skeat was published in early 20th century and it was more than 100 years ago. Thus, some of the practices in Malay culture as he illustrated might not be as strongly adhered now as compared to the time when he wrote the book[155]. This conception of traditional healer is similar as held in other society known as Na-Dene' (a native American tribe) (Begay and Maker, 2007). According to Begay and Maker (2007) traditional healers are known to possess a gift 'preordained by the Holy People with a gift of a diagnostician and a healer, a caretaker of the People and Earth' (Begay and Maker, 2007, p. 143).

However, this proposition is not found in participants' answers or responses. For example a pre service teacher, PS3F stated that giftedness is 'not necessarily inherited' even though people are 'inborn with it' (PS3F 28 May 2009). Her conception is similar with IS3F who stated that that 'giftedness is inborn in them' (IS3F 27 June 2009). Inborn gift or talent is treated as a natural ability that differentiates one from another and it is a catalyst for future development (Gagné, 2010a). From a personal communication with Gagne, he stresses that

[155] With the advancement in medical practices, it is quite common to seek professional helps for illnesses and only small numbers of people might still believe in traditional method of healing (my assumption). Based on my own experience and understanding, some of the traditional healing methods used by *pawang* (healer) are against Islamic teaching and due to this, some like myself and my family do not seek traditional help when we fall ill. In addition, in Malaysia, it is commonly perceived that all Malay is Muslims due to familial inheritance of belief system and this assumption is also depicted in Skeat's book. For example in Skeat's book, he illustrated a ceremonial chant that a *pawang* (healer) recites during healing process. The use of other name except Allah is not permissible in Islam, but ceremonial chant by *pawang* (healer) does use names such as *Zabur Hijau* as demonstrated by Skeat (1900). Thus, in recent years, the use of *pawang* (healer) in healing process is a dying art in Malaysia. From my own observation, in recent years, *pawang* (healer) is commonly associated with the practice of black magic and their ability to heal is no longer perceived as a gift.

'genotype and the family environment, do have an impact on one's talent development' (Gagné, 2010c). Also, he does not disregard or deemphasise the importance of chance factor or luck in one's life. After all, there are many instances that might cause the change of one's life direction such as an illness or accident that to certain extent are beyond one's control.

8.2.1.7 God's gift: A blessing and challenge

In some cultures, the conception of God's given gifts is prevalent such as in German (Ziegler and Stoeger, 2007), Slavic (Śefer, 2007), and Shona (Mpofu et al., 2007). This conception is related to religious belief in which being gifted is not only being blessed with exceptional ability (or abilities) but also having social responsibility as well. According to Ziegler and Stoeger (2007) being gifted means individuals are expected to contribute to the society beneficially. It is similar with Slavic conceptions of giftedness in which gifted people are socially accountable for their gifts and it has to be utilised 'through creative production' (Śefer, 2007, p. 336). For Shona people, even though gifts are considered to be God's given yet it is inherited '*to individuals through their ancestors'* (Mpofu et al., 2007, p. 235).

Similar conception is held by an in service teacher in which she wrote (in semi structured questionnaire) 'I think that gifted individual is blessed by God with abilities that amazed many people and at the same time, it can also pose problem to others' (IS1F 4 June 2009). She further explained that as a teacher, to teach gifted students would be a rare and tricky experience as much as she feels amazed by students' gifts, she also feels pressured. Her mixed feelings are best described in her responses in an interview

'When we teach a student who is gifted, ***we might feel amazed and at the same time we are challenged in teaching him/her****… what are the best ways to teach him/her?'* (IS1F 4 June 2009).

She further rephrased her words to emphasise her qualm about this issue in which she lamented

"How are we going to fulfil his/her needs? That's the challenge because ***he/she is different from others****, so in this case,* ***it becomes an intriguing phenomenon as well as a challenge for us to deal with****"* (IS1F 4 June 2009).

Apparently, IS1F was worried and uncertain about her ability to teach students who are gifted and talented -if she has to teach them-. Her repeating her concern about 'how to fulfil' students' need might be triggered from her own reflection on her teaching practice. Hesitantly, she admitted that she has encountered a smart student who scores 'As with 100% correct' in various subjects, yet she revealed that she does not know and could not confirm that this student is gifted because there is no 'guideline' that she can use to confirm her assumption.

8.2.1.8 High IQ

Various researchers agree that gifted individuals are identified based on their superior general intelligence (Tannenbaum, 1983; Sternberg et al., 1995; Ford and Grantham, 2003). IQ tests are commonly used in measuring general intelligence. Sternberg, Ceci et al. (1995) proposed that someone can be identified as gifted if the person has 'a measured IQ that is 130 and above, 140 and above or 150 and above' (p. 492). Ford and Grantham (2003) concurred that the definitions of giftedness and intelligence rely heavily on IQ tests with proposition that a gifted individuals have IQ of 130 or higher.

Two participants expressed similar conception in which both said that gifted individuals have high IQ. PS2F stated in specific that 'gifted individuals are those who **have IQ scores of 140 or more**' (PS2F 16 May 2009). Her notion of gifted individuals as having high IQ scores is parallel with proposition by Sternberg, Ceci et al. (1995) and Ford and Graham (2003). In this instance, it is latently assumed that intelligence tests are commonly used in identifying gifted students.

8.2.1.9 Sociability: What is normal and not normal?

IS2F contends that gifted individuals tend to be 'not so sociable' (IS2F 23 June 2009). Sociability is a relative concept as what considered as normal and preferable is subjected on social and cultural values as suggested by Freeman (1983), Sternberg and Zhang (1995) and others. For example, according to Gardner (1993) individuals like Martha Graham (a ballet dancer) or Picasso (a well-known painter) were criticised for their behaviours such as persevering (which could be interpreted as stubborn), hard to get along with and perfectionists. Their behaviours are perceived negatively even though their behaviours are only restricted on certain condition or situation especially to achieve or reach the level of eminence as proposed by Ericsson et al. (1993). Ericsson et al. (1993) claimed that experts in various fields spend enormous amount of times and efforts to polish and maintain their skills that they have acquired. They proposed that even though individuals are born with special ability (or abilities) yet to reach the level of eminence, deliberate practice is the key[156]. Due to an excessive amount of time spend on training, it could be understood that perhaps a gifted individual might not have many opportunity to socialise with people outside his or her circle.

8.2.2 Who are talented individuals? What are the characteristics of talented individuals?: An exploration

This study also attempted to explore pre service and in service teachers' view of talented individuals. Six participants were asked about their view of talented and from the analysis, it was found that their answers and responses are varied yet interrelated. Their responses could be summarised in several headings.

8.2.2.1 Talents: Outstanding (in terms of intensity), not rare and normal range of IQ scores

Many of the participants described that being talented means that individuals have physical abilities, not cognitive prowess. As compared to instances given by participants in describing

[156] Deliberate practice refers to systematic continuous activities with specific achievable objectives that would enhance existing genetic predisposition ability (or abilities) such as memory. Ericsson, Krampe et al. (1993) claimed that even though 'genetic factors might influence the rate of improvement due to training' (p. 7) yet deliberate practice is essential for outstanding or superior performance.

gifted individuals, greater emphasis is on intelligence and psychometric assessments such as IQ tests to identify gifted individuals. However, from some of the participants' illustrations of talented individuals, lesser emphasis was given on intelligence. The illustrations evolve around having outstanding talents in certain domains and it does not relate much on cognitive prowess. For example, PS1F (in semi structured questionnaire) wrote that 'a talented individual has talent in certain field. They are not necessarily having high IQ' (PS1F 28 April 2009). When asked further in an interview, PS1F elaborated that 'talented individuals have a unique bodily movement' (PS1F 28 April 2009). PS2F has similar view with PS1F on this in which she wrote (in semi structured questionnaire) 'talented individual has extraordinary ability and usually does not involve thinking' (PS2F 16 May 2009). She further explained in an interview that the talents that talented individuals have are not rare in terms of its types but rather in terms of its intensity. She said that

"*Talented individuals are those who have the talent****... they can do something which other people can do****, for example singing but* ***they can expand their talents or do it in 'greater' way or achieve better***" (PS2F 16 May 2009).

PS3F shared similar notion about the intensity of talent that talented individuals might portray as compared to less talented individuals in which she stated that 'their talents are more outstanding through works (as compared to others – my comment)' (PS3F 28 May 2010). In this instance, to be talented is perceived as having normal range of IQ and outstanding physical abilities such as fine motor skills which are not rare.

8.2.2.2 Recognition: self-recognition and others

When it comes to identifying talented individuals, unlike gifted individuals with heavy reliance on identification assessments such as IQ tests (refer to **Section 8.2.1.7** p. 256), one of the participants stated that self-recognition as well as acknowledgement from others is important in identifying outstanding talents. In this instance, mutual recognition by others as well as one own self as talented individual is important for future talent development.
This can be exemplified by IS1F words in an interview in which she said that talented individuals

*"**Can demonstrate their talent easier as compared to others**… when **we** (as teachers – my comment) **can identify that a child is talented** and okay… and then this **child also acknowledge** that he/she is talented"* (IS1F 4 June 2010).

Furthermore, IS1F also illustrated an example of a student who has yet to master painting using watercolours. It might take that student a certain duration of time to master it. However, for a talented student, the mastery duration might be shorter as compared to non-talented student and the result is outstanding - i.e. painting- as compared to the rest of peers and could even be compared to a painting by an adult. She further stated that 'when other sees it (the painting - my comment), they might say that 'It is done by an adult, not by a child' (IS1F 4 June 2010).

8.2.2.3 Mastery and its duration

From participants' responses -semi structured questionnaires and interviews- on the question of the characteristics of talented individuals; a theme 'Mastery and its duration' is derived. Two participants perceived differently on the duration of mastery. One participant perceived that talented individuals take less time to master certain skills. In elaborating this issue, in an interview, IS1F contended that talented students can master a task in shorter time

*"When we give a task, okay (which – my comment) related to talent, **when other students might struggle with the task, he/she** (referring to talented students – my comment) **takes less time to master it**… and **he/she performs the task easily**"* (IS1F 4 June 2009).

If IS1F emphasised on a shorter duration for mastery, in contrast, IS3F emphasised on a longer duration of mastery process. According to IS3F, development of one's talent involves a long duration of time. Therefore, she believes that a talented student should receive appropriate and continuous guidance and support from people such as teachers after helping the talented student to discover his/her talent.
In her own words in an interview, IS3F illustrated that

"*Talented students… I would say talented students, for them,* ***in order to shine… It would depend on the guidance, the teachers or supervisors around them who are able to help them to discover that they have this talent*** *and* ***it is a long process*** *that you are able to nurture them. Then they will be able to shine their talent*" (IS3F 27 June 2009).

At a first glance, it seems that IS1F and IS3F hold contradictory views about the duration for mastery. Yet, from further analyses of their responses reveal their latent view that even though a talented student might be able to master a task easily and in a shorter duration of time as compared to others yet continuous monitoring or guidance from others such as teachers are still highly needed.

8.2.2.4 Nature versus nurture

Unlike gifts, talents are perceived by some participants as attributes that can be nurtured. The words such as 'develop' or 'train' are used interchangeably with the word 'nurture'. For example, according to PS2F, 'talent can be **developed**' (PS2F 16 May 2010). IS2F stated that 'We can **train** our students to be creative one' (IS2F 23 June 2010). However, IS3F wrote (in semi structured questionnaire) that 'They (referring to talented students - my comment) have the talent which can be **nurtured** if taken care of' (IS3F 27 June 2009). In an interview later on, she clarified that she believes that 'talent is something (sic) in **nurture**' (IS3F 23 June 2009) and thus with a 'proper education, guidance, conducive environment, they (referring to talented students - my comment) can succeed' (IS3F 23 June 2010).

Summary (for Section 8.2.1 and 8.2.2)

From the above discussion in two sections, it was found that majority of the participants perceive gifts related to intellectual or cognitive ability whereas talents relate to physical ability. Based on examples given by participants, it could be concluded that they perceive gift and talent as domain specific. For instance, one participant perceive that gifted individuals are usually could be easily recognised in domain such as science, math or arts. However, it is perceived that gifted individuals possess high IQ as compared to talented

individuals. Also, giftedness seems to be conceptualised in relation to social aspect such as religious belief (it is perceived that gifts are God's given).

Giftedness is also equated with peculiarity of behaviour in which it is perceived that gifted individuals are not sociable due to the difference in their thinking and way of doing things. It seems that gifted individuals are perceived and expected to exhibit peculiar behaviour in this sense. In addition, it is perceived that talents are trainable and thus need to be developed, whereas gifts could flourish with little intervention.

Also, for either gift or talent, recognition from others such as teachers is perceived as important as recognition by one self on his ability(s). However, for gifted individuals, it is perceived that peer comparison is needed as a measure to assess one's extraordinary ability(s). In addition, from participants' responses, it was found that participants emphasise on the influence of heritability on one's gift. It is perceived that gifts are inherited from parents.

8.3 Research question no. 2: Is there any difference in the conception of giftedness and talent among pre service and in service teachers in Malaysia?[157]

8.3.1 Differences between gifted and talented individuals: An explorative comparison

Responses from semi structured questionnaires and interviews were explored to uncover participants' views on similarities and differences between these two terms: 'gifted individuals' and 'talented individuals' which are also aim to answer **Research Question no. 2**: **Is there any difference in the conceptions of giftedness and talent among pre service and in service teachers in Malaysia?**. The participants were asked whether gifted individuals are similar (or different) with talented individuals in general. Two participants stated that creativity is a characteristic that gifted and talented individuals share in common. PS3F and IS2F stated that gifted and talented individuals as creative and thus, they might be

[157] The discussion for research question no. 3 is presented immediately after the discussion for research question no. 1 because it is closely related to the former discussion as well as research question no. 1. Thus, discussion for research question no. 2 would be presented after the discussion for research question no. 3.

categorised as one group. In an interview, PS3F described talented individuals as creative in their own fields which could be specified to certain domain such as arts. She also highlighted the importance of demonstrability. In her words

"*… they have **creativity** and also **excellent**. What I mean is **excel in their fields**. Their fields do not necessarily include all fields. For example, they might excel in arts. Meaning, **they can draw or paint excellently or creatively***" (PS3F 28 May 2009).

Being creative according to IS2F is due to nature and nurture. In an interview, she emphasised that training is essential for developing one's talent even though initially, one is born with talents. She stated that

"*Talented one, to me, they are also creative (like gifted individuals – my comment) but I believe talented, **it could be nature, it could be nurture as well**. We can train our students to be creative one. They should be (sic) inborn talents. Initially, a student, he or she can't draw nicely but through training they can be talented students*" (IS2F 23 June 2009).

In this instance, IS2F believes that talent is something natural that one can develop as compared to gift in which she later stated and emphasised (using repetitive words) that
"*The gifted one is **really (sic) a gift from God** and **you cannot train**… which **you have is already originally, naturally have in yourself***" (IS2F 23 June 2010).

As compared to PS3F, IS2F's responses seem to be more vibrant in which there is a tinge of uncertainty that I detected in her responses in interview. When asked further, IS2F seems to hold similar view with PS1F who perceives that (in her response to a semi structured question) 'talented individual does not necessarily gifted' (PS1F 28 April 2009). PS1F further explained in an interview later on that

"*There are **some characteristics that could be the same, while others are different**. Sometimes, the gifted could also be considered as talented in psychomotor aspect. However, the talented does not necessarily gifted*" (PS1F 28 April 2009).

PS1F believes that a gifted individual could be regarded as talented when he displays

psychomotor ability (or abilities). Yet, a talented individual is not necessarily be gifted even though he displays cognitive ability. From her responses (in semi structured questionnaire and interview), it can be summarised that she feels uncertain about characteristics that define and distinguish gifted individuals from talented and vice versa. In this instance, her uncertainty is similar with IS2F. Even though IS2F stated that gifted individuals are considered as talented too -because both could be considered as creative- yet she also perceives that there is another characteristic that distinguish a gifted individual from a talented individual which is trainability. In her latter expression, it seems that she perceives that gifted and talented individuals belong to a different group because of this unique characteristic –i.e. trainability-. In her own words she said that

"*They can (be considered as the same group – my comment) because both of them, apparently creative. They might be… have an inborn talent but talented one, you can train (nurture – my comment). But the gifted one is really (sic) a gift from God and you cannot train (nature – my comment)*" (IS2F 23 June 2009).

In another instances, three participants stated that 'gifted individuals' are different from 'talented individuals'. PS2F wrote (in semi structured questionnaire) that talented individuals strive to gain and maintain their talents whereas gifted individuals do not have to put too much effort in gaining or maintaining their gifts and she also contended that for gifted individuals 'sometimes some of them may don't even want the gifts' (PS2F 16 May 2009). Even though she was slightly hesitated while stating the possibility of a gifted individual to be considered as talented, in general she believes that gifted individuals are different from talented individuals.

She added in an interview by saying

"*I think they are different because the gifted are those who are given special ability. May be they are talented but for the talented, they are not gifted because talent can be developed*" (PS2F 16 May 2009).

PS3F strongly asserted that 'gifted individuals' are different from 'talented individuals'. In an interview, she said that

"*For me, if one belongs to one group such as 'gifted' group, he/she can only belong to that group. And is he/she belong to the 'talented' group, he/she can only be in that group*" (PS3F 28 May 2009).

PS3F's assertion is similar with IS3F. In answering a semi structure questionnaire, IS3F's response shows her firm stance on the differences between gifted and talented individuals. According to IS3F, gifted individuals are those who 'are born with surplus points' whereas talented individuals 'are those who we (teachers – my comment) nurture them to be (talented – my comment) (IS3F 27June 2009). IS3F's stance reflects her belief on the differences between 'gifted' and 'talented' individuals on nature and nurture basis.

In contrast, only a participant stated that 'gifted' and 'talented' individuals belong to the same group. IS1F wrote (in semi structured questionnaire) that

"*The gifts that gifted or talented individuals have are extraordinary that surpass the age group performance and this extraordinary abilities have to be polished and trained so it will not be lost or wasted*" (IS1F 4 June 2010).

Summary

The responses from pre service and in service teachers on the differences between gifted and talented individuals reveal mixed notions of gifted and talented individuals. In general, it seems that teachers have varied understanding about gifted and talented individuals especially on the characteristics that define and distinguish each group. Two participants (i.e. one pre service and one in service teacher) agree that even though both belong to different group of people, yet gifted and talented individuals might share some similar characteristics such as creative and inborn superior ability(s). Three participants (i.e. two pre service teachers and one in service teacher) who stated that gifted and talented individuals are different based their proposition on the nature and nurture aspect. According to them, gifted individuals do not have to strive to maintain their extraordinary ability(s) whereas talented individuals need to develop their talents even though they are born with special

ability(s). Only one participant perceives that gifted and talented individuals are the same because both have similar characteristics and need to develop the gift or talent that they have in order to flourish.

In terms of the difference between pre service and in service teachers of their conception of giftedness and talent, it is difficult to tell to *what* extent they perceive gifted and talented individuals differently. This is because from their varied responses as well as hesitation noted through their voice tone, it seems that there are some levels of uncertainty in relation to their overall conception of giftedness and talent. In addition, it was found that majority teachers conceptually perceive that gifted somewhat differently from talented in this study.

8.4 Research question no. 3: How do Malaysian pre service and in service teachers arrive at the conceptions of giftedness and talent?

a) What are the sources of information about giftedness according to them?

b) How adequate the information in helping them to understand the concepts and issues related to giftedness?

8.4.1 Sources of information about gifted and talented: Where and how adequate the information from various sources?

To answer the first part of this research question, participants were asked 'Where do you get information about gifted and talented individuals? (Item no. 9 in semi structured questionnaire)'. An analysis of responses from semi structured questionnaire and interviews reveals that media -electronic and printed- was the most mentioned source of information by participants (see **Chapter 6 – Section 6.8.1** for details). Some participants gave examples of both media such as TV programmes, internet, newspaper and magazines. Reading materials such as academic books and journals were rarely mentioned by participants (only one participant mentioned psychology books as example of books that contain information about gifted and talented individuals). Later, in interview, participants were asked about the availability and challenge to find the sources of information about gifted and talented

individuals. In an interview, IS1F lamented that there are scarce books about gifted and talented. She postulated that

"*It seems that there are limited books about gifted and talented available. May be it (information – my comment) can be found in psychology books… about gifted and talented… ways to identify them*" (IS1F 4 June 2009).

Other than reading material, a personal experience is also regarded as a source of information on giftedness. One participant stated that she depends on her own teaching experience other than reading as a source of information about gifted and talented individuals. IS3F who has taught more than 20 years stated in an interview that she got information about gifted and talented individual from two sources: reading and her own experience.

"*Firstly, through reading and through my own experience. And when I did my degree (Bachelor in Education – Majoring in Science and Math – my comment) (…) there was one topic that we have to do, I remember my lecturer, supervisor gave us (an assignment with a question – my comment)… which is much important? Nature or nurture? So that is when I discover some students, they have 'this' inborn (sic) in them… giftedness and some are nurtured… in order for them to shine*" (IS3F 27 June 2009).

In contrast, in an interview, PS3F admits that she has limited experience in teaching (only had teaching practicum for 13 weeks during her third year) and thus, she relies on more experienced teachers to share their experiences with her as a source of information of gifted and talented students. She added that to know more about gifted and talented students, she would ask from 'more experienced people about it' (PS3F 28 May 2009).

8.4.2 Adequacy of information from stated sources

To explore further on this issue, a question was asked about the adequacy of sources (based on what they have mentioned). PS1F said that the information from sources –e.g. internet and magazines that she has mentioned- is insufficient. She further lamented that there is no guideline available from various sources of information on assessments or identifying

process that could help her to identify gifted and talented students. In an interview, she contended that

"*in school, I feel that in Malaysia… there is no gifted school and the guidelines… we don't know if someone is gifted or just plain smart? We don't know (how to identify those students- my comment)* (PS1F 28 April 2009).

Further, she was asked about other sources -i.e. other than what she has mentioned previously- that could also provide or contain information about the characteristics of gifted and talented individuals. She mentioned that discussion -either formal or informal such as in a classroom or a live TV program-, for example could be useful to gain and share information about giftedness.

Other participants were also asked similar question -i.e. other sources of information about gifted and talented-. PS3F asserted that the information from media such as television and internet is not enough and further urged that 'the Ministry of Education must expose the teachers with information about gifted individuals' (PS3F 28 May 2009). IS2F shared similar notion about instances of government efforts in providing information on giftedness to teachers such as through formal training. However she emphasised that

"***the training shouldn't be like 'latihan dalam perkhidmatan' (translated as in service training courses – my comment) because not all the teachers have interest in this particular field***. *So, may be if the government wants to carry out such program, then perhaps it should be … higher level (not just merely a day or two training courses or workshop – my comment from field notes) such as* ***post graduate diploma*** *to offer to the teachers so let's the teachers receive proper training, get proper idea, proper instrument so that when we (teachers – my comment) come to school we have (appropriate exposure on – my comment) pedagogy, the current way to identify the students, to teach in school*" (IS2F 23 June 2009).

In this instance, an intensive training is perceived as an important aspect in preparing teachers to teach gifted and talented students. Such training is seen as a mean to provide information related to giftedness that would enable teachers to identify as well as teach gifted and talented students.

Summary

An analysis of participants' responses reveals that the main source of information on giftedness is media (printed and electronic). Formal sources -i.e. academic sources- such as books or journals are rarely mentioned (only one participant mention about it). Other than media and academic materials, personal experience is also mentioned as a source of information about giftedness. In exploring the adequacy of available sources to provide information about giftedness as perceived by participants, it was found that majority of participants agree that the sources that could provide information about giftedness are limited and insufficient to enhance their understanding on giftedness and issues related to giftedness such as the characteristics of gifted and talented individuals and assessments to identify them. One of the participants perceive that Malaysian government should be more proactive in providing information as well as training for teachers to assist them in their teaching practice -i.e. in dealing with students who are gifted and talented-.

8.5 Research question no. 4: Do pre service and in service teachers confident in identifying students as gifted and talented?

8.5.1 Confidence: A general exploration

Participants' confidences in identifying students as gifted and talented are explored in this study. They were asked to rate their confidence level as well as reasons why they gave certain rate such as 3 for their confidence level. The range of confidence level as mentioned by participants is from 4 (confident) to 2 (quite confident). Only one -i.e. IS3F- rated four (4) for her confidence level. With an experience of more than 20 years of teaching, she wrote (in semi structured questionnaire) that she is confident to identify students as gifted and talented because 'I know the difference between the two (gifted students and non-gifted students). However, I may take some time in this task (of identifying - my comment) (IS3F 27 June 2009). She further explained in an interview that

"***I would not say 'very confident' (rate her confidence level as 5 – my comment) unless I have taken some special study on it (course or programme on giftedness – my comment)***

then I would say plus my experience plus my study (would help in increasing her confidence in identifying students as gifted and talented – my comment)" (IS3F 27 June 2009).

Three participants (PS1F, IS1F and IS2F) rated their confidence as three (3). Even though they rated as three (3), yet only one (IS1F) stated that she is confident to identify students as gifted and talented. She wrote that 'these individuals (gifted – my comment) have specialties that normally cannot be found in other individuals in a same age group' (IS1F 4 June 2009). However, in an interview later on, her uncertainty was revealed despite what she has written earlier on in the semi structured questionnaire. When asked similar question about why she rated her confidence level as three (3), she illuminated that

"(sic) *Have rough ideas (about giftedness – my comment) but is it true? We (teachers – my comment) have no guideline. (sic) Have rough ideas based on our experiential knowledge or media… based on our experiential knowledge, may be only one characteristic is correct… the real characteristics?… unless we have one* ***guideline that we can use as teachers (emphasised again in perceived important elements – my comment)*** *... 'These are the characteristics of gifted students' and if we have such guideline maybe we can know for sure with our initial assumption about a student as gifted could be correct*" (IS1F 4 June 2010).

The other two participants who rated three (3) for their confidence expressed their uncertainties in both writing (semi structured questionnaire) and oral (interview). PS1F admitted that 'I am not trained and do not have enough exposure (to identify – my comment) (PS1F 28 April 2009). When asked to clarify further during an interview, she illustrated that

"*I have knowledge… information but* ***I cannot apply it because I don't know how far the knowledge is accurate****. I got information just from reading but I am not really understand how that knowledge could be applied in class. I have never seen before (never encounter gifted and talented individuals – my comment). When we learn, we are given examples of gifted students (in theoretical sense – my comment) and also, this issue (of giftedness in Malaysia – my comment) is quite recent too*" (PS1F 28 April 2009).

Her uncertainties are similar with IS2F. IS2F wrote her response in semi structured questionnaire on this issue as 'Not sure. Do not have clear ideas and instrument in school to measure' (IS2F 23 June 2009). In an interview later on, she stated that she rated her confidence as three (3) and further gave a remark of 'may be yes, may be no' in asserting her confidence in identifying gifted and talented students. Using an analogy, she stated her reasons for lack of confidence

"***We don't have a vehicle (an identifying mechanism – my comment), we don't have the instrument, we don't have any test in school*** *….. In my school, we don't have a 'pemulihan' (translated as remedial class – my comment), we do have a 'bimbingan dan kaunseling' (translated as guidance and counselling – my comment), but it is 'forced' into which teacher or whose teacher should be responsible in this area. There is no particular teacher in handling (gifted students – my comment). So may be if we do (to identify – my comment), if we really need to identify gifted children, should we put a title or responsible (sic) to certain teacher that have the ability or have gone through proper training? They know how to identify*" (IS2F 23 June 2009).

Apparently, IS2F perceives that the responsibility to identify lies at the hand of certain teachers who have undergone training course specifically on this matter. Identifying students as gifted and talented could be seen as another role that she has to play other than teaching and doing some administration tasks[158]. Her stance exemplifies the roles of teachers for certain tasks are usually forced into those teachers, rather on voluntary basis. Due to this, she feels that somehow she is not ready to be entrusted with the responsibility to identify students as gifted and talented without proper training.

Another two participants (PS2F and PS3F) rated their confidence as two (2). They admit that they have limited information about characteristics of gifted and talented individuals and thus, they might face difficulties in identifying students as gifted and talented. In explaining her reasons of giving two (2) as her confidence level, PS3F clarified in the semi structured

[158] In Malaysia, it is a normal scenario to see teachers to hold administration position such as a course or subject coordinator other than teaching. The multiroles that they have to play could be stressful to certain extent and thus, it is understood if IS2F's stand is to have certain teachers with certain training to identify those students.

questionnaire that 'I do not know the specific criteria or characteristics in identifying the related students' (PS3F 28 May 2009).

As for PS2F, her reply during an interview highlighted her concern and need to understand her students more in order to discover their potentials as gifted and talented students. She stated that

"*First, **I don't really know to detect**, you know… that a student is gifted or not. Second one, I still… It shows that **I have to know more about my pupil** so that's why I gave two* (2)" (PS2F 16 May 2009).

Summary

Looking at the various responses of pre service and in service teachers with regards to their confidence in identifying students as gifted and talented, it can be concluded that the lacking as teachers mentioned to certain extent relates to teachers' confidence. As highlighted by various teachers, the lacking relates to preparation and/or readiness[159] by teachers to teach gifted and talented students as well as the existing state of teaching practice which relates to school facilities and education provision for gifted and talented students in Malaysia which is lacking.

[159] Participants attributed their unpreparedness to lack of information about characteristics of gifted and talented students, assessments and education provisions while in teacher training as well as when in teaching practice. There is no in service training course that provide them with information about giftedness.

8.6 Research question no. 5: How aware do pre service and in service teachers about identification mechanism in identifying gifted and talented students?

8.6.1 Knowledge and awareness of various assessments: an unexpected discovery

In the semi structured questionnaire, participants were asked 'Are you familiar with the identification process of identifying gifted and talented students? This question posed to explore the participants' knowledge and awareness of any assessment used for identifying gifted and talented students. However, none of the participants responded positively[160]. In contrast, even though there was no specific question asked in interviews on this issue[161], participants did mention about the limitation of information with regards to assessments several times during interview. For instance, PS3F in clarifying her confidence level in an interview, she expressed her concern about her scarce information about types of assessments that could be used for identifying gifted and talented students. She lamented that

"*It is because I don't have enough information…* ***not enough exposure to identify them*** *and also* ***information about assessments to identify them***" (PS3F 28 May 2009).

Similar concern is highlighted by other participants at various times especially during interviews which are previously discussed in earlier headings i.e. sources of information (see **p. 265**) and confidence in identifying students as gifted and talented (see **p. 268**). Another instance is, PSIF expressed her concern in an interview about the needs for teachers to undergo training specifically for this matter while clarifying her decision to rate her confidence as three (3)

[160] All of them answered 'No' to the question asking them if they know any assessment for identifying gifted and talented in the semi-structured questionnaire. Realising this, I asked them if they have any idea on how gifted and talented students are identified during interview (this question was not stated in the interview protocol). Majority of teachers stated that they were unsure on the exact process involved to identify gifted and talented students. Some of them were uncertain on the types of assessments to identify gifted and talented. Acknowledging that they have limited knowledge on this issue, teachers highlighted their concern on the need to have proper training on the identification process.

[161] This is because interview questions are based on participants' responses in semi structured questionnaire and thus, since none of the participants answered 'Yes' as an indication of their knowledge and awareness of assessment for identifying gifted and talented students, no further question was asked directly during interviews later on.

"*The main focus in our education is for normal students. In other words,* ***teachers with no expertise cannot determine or ascertain that students are gifted*** *unless they (students – my comment) have undergone assessments that could convince others that 'they are gifted'*" (PS1F 28 April 2009).

In semi structured questionnaire, participants were asked to list any query that they might have about the issue of giftedness. Among the most frequently mentioned query is about the assessment. One participant (PS2F) posed her query by emphasising standards of measurement. She wrote 'What are the standards in acknowledging giftedness?' (PS2F 16 May 2009). 'Standards' here could be interpreted as an acceptable and socially agreed upon cut-off point that would provide an indication of a person has extraordinary ability (or abilities) that worth to be valued. For example in IQ tests, the cut-off point to be identified as gifted is 130 and above as proposed by various researchers (e.g. Barnard et al. (1968); Ceci and Liker (1986); Sternberg et al. (1995); Ford and Grantham (2003)).

In addition, IS1F posed her query in general (in semi structured questionnaire): 'What is the best way to know gifted individuals? When asked later on in an interview, with exasperation note in her voice, she clarified further

"*When it comes to characteristics,* ***we know that they are special*** *(one of the general conceptions of giftedness that previously mentioned – my comment). But* ***we don't know the specific characteristics****. What we know is they perform better than their peers. Then as a teacher, we can tell that (exceptional performance – my comment) based on our experience*" (IS1F 4 June 2009).

It seems that IS1F believes that it is essential for teachers to know about characteristics of gifted and talented students in details because experience might not be sufficient in identifying gifted and talented students.

Summary

Even though participants were not asked specifically about their awareness on the types of assessments used to identify gifted and talented students in the semi structured questionnaire, yet from participants' responses during interviews, it could be concluded that participants have limited information about the procedure and/or types of assessments used in identifying gifted and talented students. However, majority of them acknowledged the lacking of information (that they have) on these matters. In this instance, other than the types of assessments, some of them also expressed their concerns over another two aspects: a) training to identify the students (for the teachers), and b) specific characteristics of gifted and talented individuals.

8.7 Research question no. 6: How do pre service and in service teachers perceive these issues:

a) **Intriguing aspects about gifted and talented individuals?**
b) **Adequacy of teaching training?**
c) **Labelling?**
d) **Important aspects in developing gifted education in Malaysia?**

8.7.1 Issues that perceived as intriguing related to gifted and talented individuals

In exploring issues that participants considered as intriguing with regards to gifted and talented, initially a question was posed in semi structured questionnaire -i.e. Are there any issue that you find intriguing about gifted and talented individuals?-. The issues are further examined and verified through interviews. Four participants stated that they want to know more on the characteristics of gifted and talented individuals. Two of the participants wondered if there are any difference between gifted individuals and talented individuals. As an example, PS3F posed these questions in an interview

"*What I want to know is '**What are the differences between them?**' (gifted and talented individuals – my comment) and '**What are the characteristics that differentiate these two groups?**'*" (PS3F 28 May 2009).

Another two pre service teachers posed a similar issue of motivation that might drive gifted and talented individuals in what they do in future. Further, PS1F asserted her mixed feelings of awe and perplex by saying

"*I am more interested in knowing **their behaviours, life styles, and aims in life**. Like Sufiah (referring to Sufiah Yusof[162], a brilliant math prodigy whose mother is a Malaysian – my comment), how many years she spent in Oxford, yet in the end… now she becomes a hot issue[163]. She is genius yet why does she end up doing negative thing?*" (PS1F 28 April 2009).

[162] Her story was featured in various major newspapers in the United Kingdom early 2008. For example, an article from Telegraph.co.uk by Neil Tweedie (2008) can be located from the following website (http://www.telegraph.co.uk/news/features/3636101/Sufiah-Yusof-child-genius-revealed-as-prostitute.html)

[163] Immediately after her story was published in local newspapers, one of the ministers in Malaysia suggested that the Malaysian government should take an action to tackle this issue (a program known as 'Save Sufiah

In addressing similar issue of motivation, PS2F emphasised also the importance of social function and contribution in her query of gifted and talented. Insightfully, she articulated

"*Their story (sic) can be motivating. To certain society, maybe it is like they make them proud… if one of them is gifted; it (sic) can make them proud. To me, it is natural (to be gifted – my comment)… because human being are different in many ways so if they are gifted, ok (she shrugged her shoulders to show indifference – my comment from field notes). It would be better is they* ***can contribute something to the society with their gifts***" (PS2F 16 May 2009).

When her carefully articulate response was probed later on, she asserted that what interest her most about gifted and talented 'depends on their (the gifted and talented individuals – my comment) capability of handling those gifts' (PS2F 16 May 2009). In comparison, if PS2F's emphasis is on individuals who are identified as gifted and talented or have gifts, IS1F's assertion is more on teachers who have to deal with gifted and talented students on daily basis. She also extrapolated various issues -e.g. means to identify, ways to deal (or teach) the students identified as gifted and talented, characteristics of gifted and talented, differences between gifted and talented, importance of guideline for teachers to identify, suggestions for parents- during an interview

"*The issue is more on* ***how to deal with them*** ***(gifted and talented students – my comment)****… the first thing that we need to address is* ***'how to identify them?****'. The things that distinguish a gifted student with talented student… what are the differences?... what are the characteristics… if we look at Malaysian context,* ***what are the characteristics of gifted****…* ***what are the characteristics of talented****… as* ***guideline that we can use****… as teachers, we might need such guideline. The second thing is* ***once we have identified him/her as gifted and talented, what should we do about it****? Do we… meaning, need to make a special arrangement for him/her? Assign a special teacher for him/her?... Or do we (hesitated for a*

Yusof Programme' (2008). However, the proposal brought mixed reactions among Malaysians. Since many against it, the programme was short lived. The issue was still prevalent when I conducted my study in early 2009 -a year after the headline-. Some of my participants did ask me about my views as a researcher related to this issue specifically. To answer their questions, discussions about Sufiah and issues related to giftedness took place after interview sessions. This is to ensure that their responses would not be influenced from the discussions with me as the researcher of this study.

few seconds – my comment from field notes)… do we need to have a special school for him/her or what? What should we do to the parents too? ***What are the advices we can give to parents****? (as teachers to their gifted and talented children – my comment)"* (IS1F 4 June 2009).

Another issue that a participant (IS2F) considered as intriguing is the unique and/or extraordinary ability that gifted and talented individuals have. She emphasised this by repeating the example of solving a math problem in an unusual and unique way as discussed by her lecturer (when she was studying in an institute of teacher education). In contrast, IS3F[164] showed indifference in her responses. She did not provide any response in the semi structured questionnaire and in an interview later on when asked about this matter, she strongly asserted that

"***I think I don't have such thing in mind****. Because in Malaysia,* ***no such things as special programmes whereby these students they are placed in special school or place in special class and they have special curriculum****… so we (I – my comment) don't have any intriguing questions for us (me – my comment) to think about it (sic)… usually we (referring to school – my comment) place them… in a big group so somehow or another, you see them shining but not to the maximum of their potentials that they able (sic) to grow*" (IS3F 27 June 2009).

Summary

The findings from this section about issues that participants find intriguing about gifted and talented individuals tap pre service and in service teachers concern to know characteristics of gifted and talented individuals, how gifted and talented individuals function in a society (relate to social function) and how to identify, teach and what education provisions appropriate for the students (relate to one part of their teaching practices). Looking at these themes from pre service and in service teachers' responses, it could be summarised that pre service and in service teachers are concerned in knowing issues in gifted education such as

[164] She works as a teacher more than 20 years. With her vast experience in teaching, her view reflects on the transition and development in the Malaysian education system for the past 20 years. In this instance, it is shown in her response during an interview when asked about this issue.

the characteristics of gifted and talented individuals which related to their overall teaching practice.

8.7.2 Adequacy of teacher's training

In this study, the adequacy of teacher's training is also [165]explored. Their views provide an exploratory glimpse on this issue and might be limited and not representative to all pre service and in service teachers in Malaysia. In interviews, they were asked to provide suggestions related to teacher's training and this could provide insights worth to be considered for improvement for the existing teacher's training in specific and future development of gifted education in Malaysia in general.

Five participants claimed that the teacher's training that they received is insufficient. The inadequacy is perceived in mainly in one particular aspect: limited courses or subjects offered that contain appropriate information about giftedness. Four participants stated that the subjects offered in teacher's college are inadequate to prepare them to deal with -i.e. to assess and teach- gifted and talented students. PS1F admitted that

"***Topics about giftedness are limited****… there are some (topics or subtopics – my comment) were taught in educational psychology only[166]. The explanation was brief though*" (PS1F 28 April 2009).

Her response is similar with IS2F. IS2F wrote in the semi structured questionnaire that 'Not adequate in pedagogy but do expose trainees with multiple teaching theories' (IS2F 23 June 2009). When she asked further in an interview, she disclosed that

"*We have this 'Ilmu pendidikan' (translated as pedagogy – my comment), 'Educational studies' (an incomplete title of a course that she took in the institute of teacher education*

[165] Adequacy of teacher training relates to preparation to teach students who are identified as gifted and talented from a small group of pre service and in service teachers.

[166] Introduction to Educational Psychology is one of the compulsory subjects offered for bachelor in education program in any teacher's training college or faculty of education in Malaysia. In the university where I teach, a subtopic on giftedness is included in the subject. However, it is unknown whether the information given during a week long discussion is enough to prepare pre service teachers in identifying as well as teaching students who are gifted and talented.

that she attended – my comment). We do not have this topic (referring to giftedness – my comment) in our syllabus but we do learn about all these teaching pedagogy, teaching theories, psychology on a surface. It is not a detail one" (IS2F 23 June 2009).

PS2F[167] lamented that the current teacher training that she undergoes does not emphasis on gifted students. In an interview, she illustrated that

"*Well, honestly there is* ***no specific subject or subtopic in my program*** *(about giftedness – my comment). So far, the focus is on those who are weak, not those who are gifted"* (PS2F 16 May 2009).

Similarly, PS3F contended that even though, there is no particular subject on giftedness -in the institute of teacher education that she attended- and she feels that at least, the government should be proactive to supplement teachers with information about gifted and talented. When she was probed with another question -adequacy of teacher's training for helping her to identify gifted and talented students-, she lamented that

"*I don't think it is enough, for me to identify them (gifted and talented students – my comment) because at least, the Ministry of Education perhaps should give the latest information about the characteristics of gifted and talented through courses, seminars, workshops or come to school to give briefing about it (despite limitation of subjects offered in institute of teacher education – my comment)*" (PS3F 28 May 2009).

Her concern was expressed similarly in the semi structured questionnaire that she filled in earlier prior the interview. She wrote

"*For your information, there is no subject which relates to this issue (gifted and talented – my comment) being included in my teacher training. Well, may be certain basic information regarding to the 'mind' (cognitive abilities– my comment) but not specifically (sic) to gifted and talented students*" (PS3F 28 May 2009).

[167] At the time of interview, she was in her final year study. She has undergone her teaching practicum and graduated in August 2009.

IS2F also expressed her view similarly on this issue. Her response in the semi structured questionnaire reveals this

"*I feel that teaching training can help in 'spotting' gifted and talented students, but teaching experience will be more helpful in this especially when we are dealing with a problem of 'What is the best way to deal with this particular student?'*" (IS2F 23 June 2009).

'Spotting' is considered as one of the step in identification process. To spot a student as having extraordinary ability (or abilities) could mean that a teacher is acting on his/her hunches which might not be necessarily true yet need to be proven. Therefore, IS2F feels that information that she received from her training as well as her teaching experiences could help her in 'spotting' such student. However, she expressed her concern about her ability to spot a student based on her initial perception. Later, in an interview, she asserted that

"*When we are studying, during teacher training, we only learned theories. And the theories that we learned are at surface level and not give us a real picture. When we read, we have a picture in our mind about something, but when in reality, it is different from what we have in our mind. It is more than what we have learned*" (IS1F 4 June 2009).

In contrast, IS3F[168] evaluated that the teaching training that she received as 'quite adequate' in the semi structured questionnaire. She further wrote that 'At least, I am aware of the differences between gifted and talented individuals' (IS3F 27 June 2009). In an interview, she mentioned about certain subjects -such as social psychological (sic) education, sociology, sociolinguistic- in which she had to do assignments that explore the issue of nature versus nurture of human ability. From those subjects that she took while taking a bachelor program in education, she believes that she has adequate information and quite confidence to identify students as gifted and talented.

[168] She is the only participant who rated her confidence as four (4) in relation to identifying gifted and talented students.

Summary

Majority of participants perceive inadequacy of teacher's training in preparing them to identify and teach students who are gifted and talented. Subjects that are currently offered in various institutes of teacher education and university (which offer bachelor in education) seem to be insufficient. Majority of participants (four participants) stated their concerns in this matter. It can be understood why they have such concern. For the pre service teachers, this could be due to limited teaching experience. For the other two in service teachers, their qualms could be attributed to their teaching experience too (both of them have teaching experience less than 10 years). However, in this vein, one participant stated that teaching experience might help her to identify the gifted and talented students. In short, participants' view on the adequacy of teacher's training is extended to the teaching experience too.

8.7.3 Labelling and its importance

It would appear from the data that some participants assert the importance of labelling students as gifted and talented. Even though majority of them agreed (five participants) that labelling is needed to some extent yet some of them revealed their reservation in this issue.

For example, for PS2F, even though she admits that it is important to label students as gifted and talented, yet she believes that the use of such labelling should be exerted sparingly. This assertion is similar with propositions[169] by researchers such as Gates (2010), Berlin (2009) and Sternberg (2007). In her written response (in semi structured questionnaire), PS2F wrote that

"***It is best if they do not know in order to develop and maintain humbleness***. *Well, it depends on the individuals. If it's for the best, it is best if they know or do not know"* (PS2F 16 May 2009).

[169] Even though some researchers agree with the use of labelling as part of identifying procedure, yet they assert that the use of such labelling should be used with extra cautions in order to avoid bias treatment and/or unnecessary pressure on students who have been labelled as such (e.g. Tannenbaum (1983); Clark and Zimmerman (1984); Hickey and Toth (1990)). As assert by Colangelo and Fleuridas (1986), labelling gifted children as 'national resources', for example presents a danger in itself in which there will be tendency to see the gifted children '*first as natural resources and second as children'* (p. 562).

Later in an interview, she contemplated again its beneficial use. She emphasised on the self-awareness of gifted and talented individuals on their own ability (or abilities) as well as other people acceptance and reactions towards them especially the significant others such as parents and teachers. With a slight note of hesitation on her voice, she further said

"***It depends**, but I don't know, but may **be if that person is gifted, I think they will know**. It is up to the people around him or her like teachers or parents, adults… they are the one who should do something*" (PS2F 16 May 2009).

When probed further, she emphasised on the appropriateness of labelling based on needs and situation in order to maintain humbleness. She asserted that

"*It depends**. If they <u>need</u> the label, I will give it**. Because sometimes if they know that they are gifted… and if that they have 'that' attitude problem that they will feel, you know, they feel that they are great, you know, they don't need to study… then if there are (sic) capacity for them to behave that way, I will not label them… because so that they will know where they are, who they are*" (PS2F 16 May 2009).

In similar tone, IS2F emphasised on the importance of educational provision over labelling because 'too much publicity, it's not good' (IS2F 23 June 2009). In addition to her concerns with the misused of labelling, she does not disregard the importance to identify students as gifted and talented. In an interview, she contended that 'It is good to identify… to know which student is the gifted one but not good to do (sic) too much publicity' (IS2F 23 June 2009). She justified further that

"*Because to them, like I said, they would do (sic) want their own life… not (sic) publicise every day… got to meet all these 'important' persons… to show that they are important. They don't really like it. I don't think that the kids (gifted and talented – my comment) like it*" (IS2F 23 June 2009).

Her hesitation is also expressed in her response in semi structured questionnaire in which she highlights the importance of socialisation for gifted and talented individuals in their daily life rather than labelling. She wrote

"*No.* ***Do not have to label them as they have to learn the way of mixing around with others*** *as a whole in class. Anyhow, praises are needed to motivate the pupils (gifted and talented students – my comment)"* (IS2F 23 June 2009).

In addition, IS3F strongly disagrees on labelling students as gifted and talented because she believes 'every individual is unique and special in his own way' (IS3F 27 June 2009). She further illuminated in an interview that with no specific educational provision to cater the needs of the students, to label them would not be helpful.

"*In my opinion,* ***we can only label them when we have some special programme for them****. If we don't have this special programme for them, labelling them is just like… labelling based on name only. You do not have special programme for them to go on, to follow up… it defeats the purpose of labelling then. Why do you label them for? For me, if you want to label them, let's have special programme, special activity for them, I would say that*" (IS3F 27 June 2009).

Apart from their varied nuances on the use of labelling, two reasons of labelling are discovered from data: (a) to provide appropriate educational provisions prior to identification and (b) to enhance ability (or abilities) through specific provisions.

a) To provide appropriate educational provision

Appropriate educational provision for students with special needs could be costly and since the needs might be varied from one student to the other, PS3F asserted in the semi structured questionnaire that with labelling, 'it is easier to assign them (for any specific educational programme – my comment) and thus it is easier to teach them' (PS3F 28 May 2009). When asked in an interview she articulated

"*I think we need to label them and create a specific programme for them because they are a 'treasure'. We need to expand their talents and we need to appreciate them*" (PS3F 28 May 2009).

b) To expand ability (or abilities) through specific provision

According to PS1F, she believes that having extraordinary ability (or abilities) means that there are special needs to be met and to be fulfilled through special educational provision. She exemplified by saying

"*For me, it is important for us to identify them (gifted and talented students – my comment) because we don't want them to miss out from attending any programme that could enhance their abilities… or existing talents. We don't want them to be excluded (from any programme – my comment) … or we don't want to overlook them (their gifts or talents – my comment) by not labelling them ….. Therefore,* ***they can use their intelligence to its maximum level***" (PS1F 28 April 2009).

IS1F shares similar notion with PS1F in this instance. IS1F's response in the semi structured questionnaire exemplifies this. She wrote

"*Yes (an indication of agreement to label students as gifted and talented – my comment). This is because* ***they need to be given training or different learning approach as compared with their peers***. ***Their abilities need to be highlighted and polished****, the sooner, the better*" (IS1F 4 June 2009).

Later, in an interview, she also stressed this notion again in an interview later on and highlighted the importance of appropriate educational provision

"(sic) *Need to label them because we already know their level of thinking is different (from others – my comment)… their abilities are also different…* ***we cannot simply put them in a group of students with different level of abilities because they need special educational provisions***. *This is for their own good in terms of their abilities. For example, we* ***need a programme that match with their ability (or abilities)***. *It is unfair to treat them the same as other students because they are exceptional from other. So we need to label them"* (IS1F 4 June 2009).

Summary

Based on previous discussion, there is no doubt that participants emphasise on the appropriateness of labeling on gifted and talented individuals. The emphasis is on social consequence and humility which should be taken into consideration prior to labeling. Also, in this respect, individual personal attributes are regarded as essential for consideration and decision for labeling. Five of the participants agree that labeling is needed to be applied yet it should be used with extra consideration. In general, teachers' stance on the issue of labeling could be attributed to the purposes of labeling on a first place. In this regards, it was discovered that teachers view labeling in relation to providing education provision for the gifted and talented students as well as enhancing the gifts or talents that gifted and talented students have.

8.7.4 Elements that perceived as important in developing gifted education in Malaysia

Gifted education is still new in Malaysia and thus, there are many aspects need to be taken into consideration for its development. Participants' views about elements that they perceived as important are explored in this study. They were asked in semi structured questionnaire: 'What are the elements that you consider as important in developing gifted education in Malaysia?' The elements that they mentioned in semi structured questionnaires and further explored in interviews could be summarised into several headings: identification mechanism, experts, educational provisions and teachers (including teaching training or preparation).

8.7.4.1 Identification mechanism

For the purpose of identifying students as gifted and talented, three aspects are highlighted by participants. First, the awareness on the needs of gifted and talented students for identification or assigning programmes should be emphasised.

PS2F illustrated

"*Well, it would be better if we (teachers – my comment) know their needs, what they need… they (administrators – my comment) should focus on their need. If they need certain task or activity, to enhance their ability, we focus on that… (sic) their need*" (PS2F 16 May 2009).

Second, since education system in Malaysia is mainly controlled by the government, some participants perceive that it is essential for the government to be proactive in this issue. PS2F clarified

"*They (the government – my comment) are the one responsible for it (education system – my comment). Of course, this gifted (students – my comment)… come from different families, different backgrounds, perhaps they can come from rural areas, the government is the one can detect them. Because they (students – my comment) will go to national school, the government is the one who handles the national schools. So they (government – my comment) are the first one to know if the gifted students or not (sic). They have the role to play. They should be responsible to these kids… gifted individuals. If they treat them wrongly, it will be their (nation – my comment) loss and also the teachers, okay*" (PS2F 16 May 2009).

One of the government roles in this regards is to provide appropriate programs for the gifted and talented students. This is what exemplified by IS1F who believes that

"These students need extra help from others such as people in government offices like JPN (an acronym for Jabatan Pendidikan Negeri (State's Education Office) – my comment)… we need to tell them (JPN) and they will do a programme for them" (IS1F 4 June 2009).

Third, participants also highlight the needs of a guideline to identify. 'Guideline' has been mentioned several times throughout interviews by some participants. When some of them are asked to clarify further, 'guideline' means condensed information about gifted and talented that they (as teachers) can use in identifying gifted and talented students such as characteristics of gifted and talented as emphasised previously by IS1F, for instance (refer to confidence p.17-19).

PS1F stated that

"*If there is a guideline (for initial identification purpose – my comment) we are not worried about it and we are more expert and have more knowledge in identifying them*" (PS1F 28 April 2009).

IS1F clarified that teachers need such guideline for identification because

"*Each teacher needs to know because* ***we are the persons who are close to them, who can detect their performance level, knowledge****… we are the one closer to them. These* ***teachers are the one responsible for assessing their abilities****. May be parents cannot detect their abilities, so we as the one who teach them, we should know more about their specialties (special abilities – my comment)"* (IS1F 4 June 2009).

8.7.4.2 Experts

In highlighting the importance of having a guideline for identification in school by teachers, some participants also emphasised on the significant roles of experts in gifted education. PS3F wrote that experts are needed in the development of gifted education in Malaysia. When she was asked further to elaborate the roles of experts in gifted education, she believes that experts 'should design and create such programme' (PS3F 28 May 2009) and she added also that

"*The experts can help the teachers by* ***training them in identifying gifted students*** *as well as* ***training the gifted students as well as talented students*** *(she perceives that gifted students are different from talented students – my comment)"* (PS3F 28 May 2009).

IS1F expressed similar notion on the importance of experts in providing training to students who are gifted and talented. She added that experts also can act as mentor to these students. In her own words, IS1F further illustrated that

"*If we (teachers - my comment) could have experts to help… not to say that we give up our responsibility to teach those students… rather we have constraints when it comes to time, teaching loads, number of students per class"* (IS1F 4 June 2009).

She lamented that in most cases, parents leave the responsibility to educate their children to teachers. In concluding her response on this issue, she emphasised the importance of collaborative efforts among various people such parents, school administrators, and experts in gifted education with teachers in helping students with special needs.

8.7.4.3 Education provision

Examples of education provision that some of participants mentioned are: specific gifted programs, special curriculum, and classroom activities that could cater gifted and talented needs. IS2F provided elaborated details on this

"*First of all, the teachers themselves* ***must have the capability and the school should provide suitable facilities and learning materials just for the pupils*** *(gifted and talented – my comment). Okay. And then, or course,* ***the class size should be smaller****. It should be 1:2 or 1:5. So we can tailor made or* ***specify our teaching and learning (activities – my comment) towards (sic) the students*** *and let them learn in a more specific way. And of course,* ***the curriculum should be different from a normal school*** *as well as to expand their talent"* (IS2F 23 June 2009).

In another instance, IS3F asserts the importance of suitable and challenging class activities or tasks for the gifted and talented students which match the level of their cognitive ability. Her assertion was similar with IS1F who believes that a special education provision should be provided to the gifted and talented students to enhance their special abilities. IS1F further said that 'it is unfair to treat them the same as other students because they are exceptional' (IS1F 4 June 2009).

8.7.4.4 Teachers and teaching training

From one of the participants' responses, an analogy is used to illustrate the importance of teachers and also their training in the development of gifted education by one of the participants. IS2F elaborated

"*We do have the 'hardware' (schools – my comment) but do we have the 'software' to run the 'hardware'? The 'software' is the teachers are very important. So the teachers must have the proper training in handling all these gifted students*" (IS2F 23 June 2009).

Similar assertion was expressed by IS3F on this matter. When she was asked to justify the need to have special training on teaching gifted and talented students, she highlighted that *'at present, the government… the Education Ministry, they have special training for teachers to teach the remedial students but they do not have special training for teacher for this gifted students'* (IS3F 27 June 2009).

In this instance, it shows to some extent teachers aware on the current education practice and thus, they perceive that it is important to train teachers to teach the students identified as gifted and talented. As previously discussed in various sections, teachers perceive that identification process should parallel with the availability of special provision as well teachers' preparation to teach the gifted and talented students. As asserted by pre service teachers the current introductory courses that they had are not enough to prepare them to teach gifted and talented students (as mentioned and discussed in **Section 8.7.2: Adequacy of teacher's training**).

Summary

As presented in **Table 8.1,** the aspects which participants considered as important in developing gifted education in Malaysia are further illustrated. Participants acknowledge and believe that efforts from various sources such as experts are essential in the development of gifted education in Malaysia. Identification mechanism that is emphasised in this instance includes guidelines for teachers in identifying gifted and talented students (school level identification) as well as the roles by government agencies or experts in assessing students as gifted and talented.

Other than identification mechanism, education provision such as programmes for gifted and talented students are also been highlighted in their responses. In similar note, the roles of teachers, government and experts are again being emphasised. However, it is worth to note that parental efforts are not being dismissed here even though it is not being highlighted in

their responses. Rather, it shows that their main emphasis is on what and who are considered to play the main role as 'the provider' in education system. Parents and their children might be considered as 'the client' in education system and thus, not being highlighted in their responses. In this instance, it could be concluded that majority of the teachers' responses are based on their reflection on their roles as teacher or education provider and thus, their emphases are more on teaching policy and practice rather than the role of parents in teaching and learning process.

Table 8.1: Elements participants considered as important in the development of gifted education in Malaysia

Important elements of gifted education in Malaysia	
1. Identification	• Awareness on the needs of students identified as gifted and talented • Government involvement (assessment and education provisions) • Guideline for teachers to use for referral
2. Experts	• Development of appropriate education programs, activities • Collaborative efforts
3. Teachers	• Teacher training - More specialised bachelor program on gifted education - Identification (characteristics of gifted and talented)
4. Education provisions	• Special curriculum • Classroom activities that suit with the needs and abilities of gifted and talented students

8.8 Conclusion

In this chapter, I analysed and discussed teachers' responses from semi-structured questionnaire and interviews to answer the research questions posed in this study qualitatively. Findings are organised into different sections according to research questions. In addition, a summary is provided at the end of each section accordingly. In summary, in general it was found that pre service and in service teachers' conception of giftedness and talent is varied. In addition, teachers' views on various aspect such as adequacy of information from various sources and their teacher training, confidence, awareness on identifying mechanism (i.e. identifying procedure and/or assessments), importance of labelling and such highlight the needs in preparing them to deal with gifted and talented students. As a preliminary suggestion from the findings of qualitative data, it is proposed that teachers need to be exposed with appropriate information of gifted and talented

students in terms of the characteristics, assessments as well as education provisions for the students.

Further discussion will be presented in the concluding chapter. In the concluding chapter, I shall begin the discussion by summarising the overall thesis which will follow with an overview of the rationale of the study; research methodology used in this study; findings from both quantitative and qualitative method; limitations of the study and implications for reference of future studies and educational policy and practice in developing gifted education in Malaysia specifically.

Chapter 9: Summary and conclusions to the study

9.1 Introduction

In previous chapters (**Chapter 6,** 7 and **8**), discussions on the various data analyses undertaken and findings were presented. The discussion in this chapter will be more holistic and thus, seeks to draw broad conclusions where possible. In general, I have divided the discussions in this chapter into seven sections with the first introduces the overall organisation of this chapter. The second illustrates the summary of the thesis in brief as well as rationale for the study. An overview of research methodology used in this study is presented in the third section to recap previous discussion in **Chapter 5**. The fourth section summarises the findings from the comparison between the quantitative and qualitative findings of the conception of giftedness. Also, findings from quantitative and qualitative data are merged to answer research questions where appropriate. In line with the holistic nature of this chapter, I will draw broad conclusions where possible. In developing an overview and synthesis of the findings, I would return to the six research questions that guide this thesis which were first presented in **Chapter 1**. Then, limitations of the study are discussed in the fifth section together with the strengths of this study which will be highlighted where appropriate. The sixth section discusses the implications of this study. Reflections for future study are also presented in this section. Lastly, my final thought is presented in the seventh and final section of this chapter.

9.2 Summary and rationale of the study

As discussed in **Chapter 1** and **Chapter 3**, gifted education in Malaysia is still new and there is a need for more research on issues related to giftedness. With no specific definition based on the Malaysian context on giftedness, I attempted to explore on the conception of giftedness and talent among pre service and in service primary school teachers in Malaysia. My exploration targeted teachers because in general they are perceived to play important role in educating students. Even though there are previous and current attempts to provide special education provision to gifted and talented students in Malaysia, yet the attempts are sporadic and some are not fully implemented in the formal education system and more importantly, it is still unclear how teachers are involved in such programs. In addition,

regardless of such programs and teachers' involvement, teachers' understanding and conception of giftedness and talent are left unexplored. Thus, this study is aimed to fill the gap and uncover teachers' conception of giftedness and talent.

In other words, this study investigates the conception of giftedness and talent that teachers perceive which might be influenced to some extent by various factors such as the available sources about giftedness that teachers refer to and teacher training and/or teaching experience. Even though it is hard to discriminate between the influential factors on their conception, I attempted to explore from interviews factors such as teachers' perceptions of the adequacy of available sources to refer to about giftedness and teacher training as well as teaching experience that they have. From the qualitative data, it was discovered that their conception is influenced by what they read from the available sources, teacher training and their own teaching experience. Since these three aspects are explored qualitatively, thus, interpretations are based on teachers' personal responses and might not be generalised to wider population. However, it is hoped that this findings might generate ideas for future study.

Other than that, my study also investigates teachers' awareness of the identification procedure (the identification processes involve as well as assessments to identify gifted and talented students). From the literature, there are various assessments used in identifying gifted and talented students such as IQ tests, personality tests and behaviour checklists (see **Chapter 3 – Section 3.3**). Each assessment has specific purpose and is used to measure a specific construct, such as IQ tests are used to assess intelligence, not to measure creativity. However, apart from their conception of giftedness and talent, I attempted to explore their perceptions and understanding of the assessments used in identifying gifted and talented students because there is no study has explored this particular issue in Malaysia.

In relation to their awareness and understanding of identification assessments, I also attempted to explore teachers' confidence in identifying students as gifted and talented qualitatively. Their own rating on their confidence level indicates to some extent their readiness to assess students as gifted and talented. For the pre service teachers, it is assumed that they have limited teaching experience and thus, their confidence in identifying gifted and talented students might be came from teaching training. In contrast, with

teaching training as well as experience, in service teachers' confidence to identify gifted and talented might be different from the pre service teachers.

Furthermore, I also investigated issues related to giftedness such as intriguing matters about giftedness, labelling as well as important aspects in developing gifted education in Malaysia as perceived by teachers. These issues are explored qualitatively to uncover teachers' general and broad understanding of those issues.

9.3 Overview of research methodology

In this study, a mixed method design was used for data collection and analysis. Survey using structured questionnaire was used to gather quantitative data. In addition, semi-structured questionnaire and interviews were used to gather qualitative data. Three phases of data collection: pre pilot, pilot and main study facilitated the development of the instruments used as well as data collection that aim to answer the research questions and objectives.

Throughout the development of this study, one main question remained the centre of this study: **What is the conception of giftedness and talent as perceived by teachers?** This research questions was explored using survey, open ended questionnaire and interviews. Quantitative data is analysed using Principal Component Analysis (PCA) to investigate the pattern structures of the conceptions of giftedness and talent. In this analysis, the robustness of pattern structures is also explored to uncover the item relations and consistency of loadings among items in similar components. This exploration could be said as a macro level exploration.

In micro level exploration, the conception of giftedness and talent as held by teachers are investigated in which individual responses are assessed to uncover similarity or difference that might exist. To ascertain if there is statistically difference between teachers based on certain grouping criteria, inferential statistics (t-test) was used. The exploration of differences based on three (grouping) criteria: type of groups, gender and subject taken is meant to prove any statistically differences. In addition to that, thematic analysis is used to analyse qualitative data in which themes are first identified and dimentionalised later for

refinement. Qualitative themes are later synthesised with quantitative components to answer the specific research question no. 1 and 2.

Other research questions are closely related to the main research question in which each involves in the exploration of various issues related to the conception of giftedness and talent. Among the related issues investigated in this study are the sources of information on giftedness, adequacy of teacher training, teachers' awareness on assessments to identify students as gifted and talented as well as their confidence in identifying them. The investigation of these various issues is primarily using qualitative approach. This is because it is assumed teachers' responses using qualitative approach would provide unstructured and rich data to answer adequately research questions posed in this study.

The next section reviews the findings.

9.4 Overview of quantitative and qualitative findings: Implicit notions of giftedness and talent

The conception of giftedness and talent based on quantitative findings is different in comparison to qualitative findings due to several reasons. First, the samples for quantitative data were from 1178 participants as compared to six participants for qualitative data. Second, the qualitative data were from female participants only and thus, the illustrations derive from the data might not be able to reflect male views on the issues explored in this study. Third, there were instances in which responses in qualitative method could not be categorised quantitatively and thus, discussion would be referred to the research questions. The main aim of qualitative data is to investigate responses that are in depth and illustrative and thus, it is expected that the discussion would be based on themes emerged, rather than structured and predetermined themes.

Regardless of the differences, quantitative and qualitative findings were examined as an attempt to answer the six research questions that guided the thesis which were first presented in **Chapter 1**.

9.4.1 Research question no. 1: What is the conception of giftedness and talent (as held by pre service and in service primary school teachers)?

From literature as reviewed in **Chapter 2, 3** and **4** previously, it could be summarised that the emphases of a model or theory of giftedness could be categorised into three: a) types of giftedness, (b) characteristics of giftedness and talent and (c) developmental process of gift and talent. The first emphasis could be seen from propositions like Gardner's multiple intelligence theory and the Marland report. These propositions highlight a wide array of giftedness (e.g. the Marland report) or domains of giftedness (e.g. Gardner's multiple intelligence model). In this instance, gifted and talented are perceived as having extraordinary ability in one domain or more. Thus, the definitions of gifted and talented individuals are closely associated to the domain ability that they have (VanTassel-Baska, 2005). For instance, someone with extraordinary ability in mathematics might be defined or identified as a mathematically gifted individual. This proposition is supported by other researchers such as Ziegler and Heller (2000) and Piirto (1995). In studies by others, it could be seen that specific terms or labels such as mathematically gifted (e.g. Heinze, 2005; O'Boyle, 2008), or talented (Terwilliger and Titus, 1995), intellectually gifted (e.g. Achter et al., 1996) or artistically gifted (e.g. Wolfe, 1997) are used as a form of reference or labelling.

Other than types of giftedness, conception of giftedness and talent as stated in any model or theory could also be focusing on characteristics of gifted and talented individuals such as above average ability, creativity and task commitments as proposed by Renzulli (1978), for instance. In this vein, regardless of ability domain that a gifted and talented individual might has, it is proposed that to be identified as gifted and talented, one has to have specific characteristics as proposed in various models or theories (e.g. Renzulli's (1978) three-ring conception of giftedness).

The third emphasis is on the developmental process of gifts and talents. In this regards, the model or theory which focus on this aspect illustrates the complex interplay of various aspects in the development of gifts and talents. Gifts and talents are perceived as not as stable or isolated personal traits rather relational traits between an individual with the environment (Csikszentmihalyi and Robinson, 1986; Csikszentmihalyi, 1996). Similar propositions by Piirto (1995), Gagné (1985; 1991; 2000; 2004, 2010a; 2010b) and Heller and

Schofield (2008) highlight the importance of various influencing aspects or catalysts (the term which Gagné specifically used in his model) in development of gifts and talents which suggested the potentiality to be gifted and talented. In this instance, to be identified as gifted and talented means one needs to have modifiability traits (Sternberg et al., 2011) or social adjustability (Gibbons et al., 1994).

In summary, regardless of the extensive models or theories of giftedness proposed by various researchers, when it comes to individual level such as teachers' conception of giftedness and talent, it was hypothesised that the conception as teachers hold might be different from existing theoretical conceptions of giftedness and talent (see **Table 9.1** for summary). In this study, **Research question no. 1: What is the conception of giftedness and talent (as held by pre service and in service primary school teachers)?** was explored largely through quantitative and qualitative analyses gained from survey and interviews. The analyses were discussed in depth in **Chapter 6-8** and could be divided into three parts in this section: descriptive, inferential and thematic analysis.

First, from the descriptive analysis, it was discovered that there is variation among teachers on their agreement on some of the characteristics of giftedness such as perfectionism. The percentages of teachers who perceive perfectionism as one of the characteristics of giftedness are nearly the same. In this vein, it could be concluded that teachers have mixed perception on this characteristic of giftedness. Based on various studies, perfectionism is one of the characteristics commonly found in gifted and talented individuals (Hewitt and Flett, 1991; Pyryt, 1994; Parker and Adkins, 1995; Dixon et al., 2004; Speirs Neumeister, 2004b; Speirs Neumeister, 2004a; Hoekman et al., 2005; Kornblum and Ainley, 2005; Speirs Neumeister and Finch, 2006; Chan, 2009; Maksić and Iwasaki, 2009).

Other than perfectionism, from the descriptive data, it was found that the percentages of teachers who perceive that gifted individuals have similar characteristics as talented individuals are low. This indicates that many teachers perceive that gifted individuals have different characteristics from talented individuals. In addition, this also shows that teachers perceive gifted individuals are different from talented individuals. However, there is no previous study in Malaysia have been conducted to explore the difference perceptions on the usage of terms such as 'gifted' and 'gifted and talented' because the use of such terms is

still very much in debate (Thompson and Oehlert, 2010) even though various researchers used the term 'gifted' interchangeably with 'gifted and talented' in various instances (for details, see Gagné, 1985; Cohen et al., 2000; VanTassel-Baska, 2005). In this study, from qualitative findings, it was found that term 'gifted' and 'talented' are perceived as two different terms (see **Chapter 8** - **Section 8.2** for details).

Second, other than descriptive analysis, Principal Component Analysis was attempted to explore the pattern structures of the conception of giftedness and talent. Three separate analyses were attempted because it is aimed to explore the conception of giftedness and talents as perceived by pre service and in service teachers as one whole unit. This would provide more generic conception of giftedness and talent as a model. An analysis which uses two separate groups could lead to two models of conception of giftedness and talent. An ideal attempt is to have an analysis using two separate groups as well as an analysis which combines the two groups as a unitary group. However, such attempt could be adopted only if the sampling is strong enough to yield robust analysis as suggested by Pett et al. (2003)[170]. In this study, to yield robust analysis of the three tiers of PCA, pre service and in service teachers are regarded as one group.

In summary, from the main findings from three principal component analyses (as presented in **Chapter 7 – Section 7.3**) it shows the 'messiness' of the conceptual understandings from the sample. It seems that there is no well-defined structure of the conception of giftedness and talent as held by the pre service and in service teachers in this study from the results of principal component analyses. Principal component analysis was conducted thrice in which both pre service and in service teachers are regarded as one group. In this study, pre service and in service teachers are regarded as one single group because it is aimed to find pattern structures of the conception of giftedness as a whole in general. Findings from the first PCA with no suppression yield 13 components. From the 13 components, there are items which do not suppress or belong to any of the proposed dimensions in this study.

The findings from the second PCA with suppression of 10 components based on the proposed dimensions in this study show consistency of item grouping in various items, from

[170] According to Pett et al. (2003), at least there are 10 to 15 respondents for every item in a research instrument. Thus, in this study, it is an ideal to have at least 600 to 900 respondents for each group to conduct a separate analysis to measure factorability of items.

a simple comparison with previous findings from PCA. In this instance, it shows that some of the items loaded in these two PCA belong to the same component based on consistency of loadings. To confirm and strengthen this speculative assumption, the third PCA was conducted. From close examination on overall items in three PCA, it was found that there are numbers of items loaded in more than one component consistently in three PCA (i.e. item no 9, 10, and 36). In this vein, it could be concluded that such items have do not fit well in any of the component.

In summary, from the three tiers of PCA, it could be concluded that even though there are consistency of item loadings in three analyses which indicates pattern structures of conception of giftedness and talent, yet a close examination on individual item within a component or dimension reveals that there are some components with more than one dimension of constructs (e.g. dimension no. 3, 4 and 5 in the third PCA). For example, in the third dimension (Psychosocial dimension), it was discovered that half of the items within the dimension relate to different sub-dimensions. Even though each sub-dimension might be linked, yet it represents specific construct. In this instance, it is speculated that the hypothesised dimensions are not as robust as it may seem.

In addition, even though it is a speculative assumption, such results provide an indication that with no consensus of conceptions of giftedness and talent as proposed by various researchers (Robinson and Clinkenbeard, 1998; Thompson and Oehlert, 2010), it is little wonder that the conception of giftedness and talent as perceived by teachers at practical level might be varied too. In this regards, there might be no clean pattern of conception of giftedness and talent as perceived by teachers. In this regards, it is important to explore *why* such phenomenon might occur. In this study, even though it is not attempt to find possible explanations of such phenomenon, but based on the existing findings, one of the possible explanations might be due to lack of specific subjects or giftedness or teaching program on gifted education. In this instance, teachers rely on the available teaching training subjects (which limited on topics related to giftedness) as well as teaching experience to prepare themselves to deal with gifted and talented students. This is extrapolated based on qualitative responses from interviews when teachers were asked about the sources of information about giftedness and the adequacy of teaching training (for details, see previous **Chapter 8** – **Section 8.4** which explicitly explore the respective issues).

Third, the analysis of qualitative data from semi-structured questionnaire and interviews revealed teachers' conception of giftedness and talent could be divided into two, general and specific. From the qualitative data, it was found that teachers perceive students as gifted and talented in general sense (see **Table 9.2** and **9.3** for illustrations). Specific characteristics of giftedness which are proven from various studies such as perfectionism (Pyryt, 1994; Parker and Adkins, 1995; Speirs Neumeister, 2004a) is found to be less considered as one of the characteristics of giftedness in this study. Thus, this explains the minimal variation (in terms of percentage) between teachers who held perception of perfectionism as one of the characteristics of giftedness and teachers who perceive that perfectionism is not a characteristic of giftedness.

In addition, from qualitative data, it was revealed that teachers perceive gifted individuals have different characteristics from talented individuals (refer to **Chapter 8** – **Section 8.3.1** for details). This qualitative finding is similar with previous descriptive finding (discussion on this aspect is presented in **Chapter 6** – **Section 6.8.3**). Looking at the variation from descriptive finding, some of the teachers were further asked in the interviews to explore their different conception. When probed further, it was discovered that the differences are based on different emphasis on the domains of giftedness. From the findings, teachers perceive that gifted individuals have superior intellectual ability, whereas talented individuals have extraordinary psychomotor ability. In addition, teachers perceive gifted individuals to be talented when they possess extraordinary psychomotor ability, whereas for talented individuals, teachers do not perceive them as gifted if they do not have superior intellectual ability.

This assumption is related to teachers' perception on the issue of nature and nurture which also found in this study. Giftedness is perceived as having extraordinary gifts which could flourish with limited nurturance. For the talented, teachers perceive that talented individuals have to train or develop their potential through hard work and continuous efforts. In summary, teachers perceive that gifted and talented individuals as two separate groups with different domain of ability. This finding does not conform to the existing proposition in which gifted and talented is treated as a unitary term and thus, gifted and talented individuals are regarded as the same (refer to previous discussion in **Chapter 1 – Section 1.5**). From the psychological literature as previously discussed in **Chapter 2**, there is

no consensus on the term and many researchers claimed that the distinction between gifted and talented in terms of its definitions and usage is still in debate (Hoge, 1988; Ziegler and Heller, 2000; Thompson and Oehlert, 2010). However, from recent psychological literature, most researchers or writers use the term 'gifted' to refer to 'gifted and talented' (for details, see Massé and Gagné, 2002; Freeman, 2010; Freeman et al., 2010; Gagné, 2010b). In this sense, the term talented is perceived as intertwined with giftedness and vice versa.

9.4.2 Research question no. 2: Is there any difference in the conception of giftedness and talent among pre service and in service teachers in Malaysia?

To answer this question, structured and semi-structured questionnaires and interviews were used. For the quantitative analysis, first, descriptive analysis was used to glimpse on the overall similarities and differences among teachers' conception of giftedness and talent based on various statements in structured questionnaire. There was substantial difference between the agreements of statements from teachers and the research findings that serve as the basis of various statements. However, this analysis is meant to provide an initial view on the teachers' conception of giftedness and talent.

To uncover differences between groups of teachers, inferential analysis was used to explore the differences. In this instance, the exploration of differences between groups of teachers is limited on three corresponding aspects: type of groups (pre service and in service), gender as well as subject taken[171]. Thus, differences of their conception as two separate models of conceptions of giftedness and talent are not attempted in this study using PCA.

Findings from independent t-test revealed that there is significant difference between pre service and in service teachers in terms of their conception of giftedness and talent. However, there is no difference in terms of gender and groups that have taken subjects while undergoing teaching training. The subjects that are currently offered in a variety of teachers training institutes or universities do not specifically give detail information about giftedness and thus, it is relate to the findings that there are no differences between pre service and in service teachers who have taken subjects or not in terms of their conception.

[171] In this study, the difference between teachers is also explored based on the subject that have taken or not during their teaching training. In this regards, subject taken is coined as a form of reference for this type of grouping.

In this regards, even though the differences might be present to some extent, but statistically it was found otherwise.

However, it seems that when teachers are given freedom to provide response qualitatively and with less constraint, they reveal the nuances in their conception of giftedness and talent that encompass of similarities and differences with existing models or theories of giftedness and research findings (see **Table 9.1** for details). Yet, the similarities and differences might have to be looked at from the individual characteristic within a theme specifically to get explicit view. In this vein, this thesis provides a tentative conclusion that, the conception of giftedness and talent among teachers is not as robust as it might be assumed in comparison to any model or theory of giftedness and research findings on characteristics of giftedness (see **Table 9.1** for summary).

In this instance, some of the characteristics mentioned by teachers are identified and considered to be a part of gifted characteristics as suggested in any model or theory of giftedness as discussed in **Chapter 2**. In addition, it was discovered that teachers perceived that talented individuals is perceived as having difference as well as sharing similar characteristics with gifted individuals[172] from qualitative data exploration. In this vein, talented is viewed differently as gifted (see **Table 9.2** as an illustration). **Table 9.1** and **Figure 9.1** present a summary from both findings (quantitative and qualitative).

[172] Further discussion is presented in the next section to compare the similarities and differences on the conceptions of giftedness as perceived by the participants.

Table 9.1: A summary of findings in comparison to existing models or theories of giftedness

Model / Theory of giftedness (According to time sequence)	Characteristics of giftedness and talent (Model or theory)	Characteristics of giftedness and talent as perceived by Malaysian teachers
Three-ring conception of giftedness (Renzulli, 1978)	• Above average ability • Creativity • Task commitment	• Generic views - Giftedness is perceived different from talented - Giftedness is socially constructed concept - Gifted and talented might be classified into different groups according to intensity of their giftedness • Genealogical views - Giftedness relates to genetic predisposition of extraordinary potentials (ability / talent) yet it might not necessarily inherited • Psychosocial characteristics - Peer comparison - Sociability - Uniqueness (infrequent occurrence and/or existence) - Developmental traits (need education provision, training or practice) • Discrete characteristics - High IQ - Creativity - Above average ability • Biological characteristics* • Future success catalysts - Developmental traits (need education provision, training or practice)
Componential theory of intellectual giftedness (Sternberg, 1981)	• Muticomponents of mental processes: metacomponents, performance components and knowledge-acquisition components • Gifted and talented is perceived as superior in each component	
Multiple intelligences (Gardner, 1983)	• Multiple intelligences (six intelligence) • Context: how any type of intelligence is valued and/or considered as valuable	
Developmental model of natural abilities (Gagné, 1985; 2010)	• Natural abilities • Catalysts (Internal and external) • Developmental process • Cut-off point (age-peer comparison) • Chance • Basements of natural talents (genotypic foundations)	
Triarchic theory of intelligence (Sternberg, 1985a)	• Three intelligence components: componential, experiential and contextual • A gifted and talented individual might be more dominant in one or more of these components	
Pentagonal implicit theory of giftedness (Sternberg and Zhang, 1995)	• Excellence • Rarity • Demonstrability • Productivity • Value	
Pyramidal talent development (Piirto, 1995)	Internal components • Personality attributes • Minimum intellectual competencies • Domain specific (specification of high IQ on domain like maths, science and linguistic vs. minimum IQ level for domain like arts) External components • Home • School • Community/culture • Gender • Genes • Chance	
Munich model of giftedness (Perleth and Heller, 1994)	• Domains of giftedness: intellectual, creative, social, musical and psychomotor • Giftedness and achievement are mediated by noncognitive personality traits • Socialisation is important for talent development	

Note: There is no evident match between the findings in this study with any particular model or the ory of giftedness.
*This particular component is not stated in any model or theory (biological characteristics such as brain size or weight). The items in this component in based on physiological psychology studies and thus, it might be remote from existing model or theory of giftedness which more on the field of educational psychology.

Table 9.2: A summary of quantitative and qualitative findings (specifically on the characteristics of giftedness) – A merged of quantitative and qualitative findings[173]

Quantitative findings: Pattern structures (components)	Qualitative findings: Themes
• Generic views • Genealogical views • Psychosocial characteristics • Discrete characteristics • Biological characteristics • Future success catalysts	• Different characteristics of giftedness and talent • Giftedness: - Superior or above average ability - Unique / rare - Genetic predisposition (not necessarily inheritable) - Creativity - Peer comparison - Sociability - God's gift - Specific ability domain - High IQ • Talent - Mixed responses on nature and nurture (debate) - Physical ability - Normal range of IQ scores - Mastery and its duration - Recognition

[173] The merged findings are specifically related to research question no. 1 and 2. See **Section 9.4.1** and **Section 9.4.2** for detail discussion.

Table 9.3: A summary of various aspects understudy of two groups (Pre service and In service) – Qualitative findings (Merging both groups)

Aspects understudy	Pre service	In service
Characteristics of giftedness and talent	Giftedness • Superior ability * • Specific domain ability or abilities ** • Uniqueness * • Natural predisposition * • Heritability (not necessarily inherited) ** • High IQ ** • Creativity * Talent • Physical ability ** • Normal range of IQ level ** • Nature vs. nurture* (terms used: 'develop', 'train', 'nurture') 'Gifted and talented' is not perceived as a unitary term and from participants' responses, it could be concluded that they perceive 'gifted' individuals as different from 'talented individuals' *	Giftedness • Superior ability * • Peer comparison ** • Uniqueness * • Natural predisposition * • God's blessing ** • Sociability ** • Creativity* Talent • Recognition (by oneself and others)** • Mastery and its duration ** • Nature vs. nurture* (terms used: 'develop', 'train', 'nurture') 'Gifted and talented' is not perceived as a unitary term and from participants' responses, it could be concluded that they perceive 'gifted' individuals as different from 'talented individuals' *
Sources of information and its adequacy	Survey • Media * • Books* • Journals * • Friend/family with gifted and talented child * • Newsletter * • Training * Open-ended questionnaire and interviews • Media * • Books * • Journals * Sources of information that listed in survey were collected in separate questionnaire. Thus, the listed sources are many as compared to what is written and mentioned in open-ended questionnaire and interviews. From interviews, it was found that participants used media as primary source of information. This particular finding was similar from survey response (high	Survey • Media * • Books * • Journals * • Friend/family with gifted and talented child * • Newsletter * • Training * Open-ended questionnaire and interviews • Media * • Books * • Journals * Sources of information that listed in survey were collected in separate questionnaire. Thus, the listed sources are many as compared to what is written and mentioned in open-ended questionnaire and interviews. From interviews, it was found that participants used media as primary source of information. This particular finding was similar

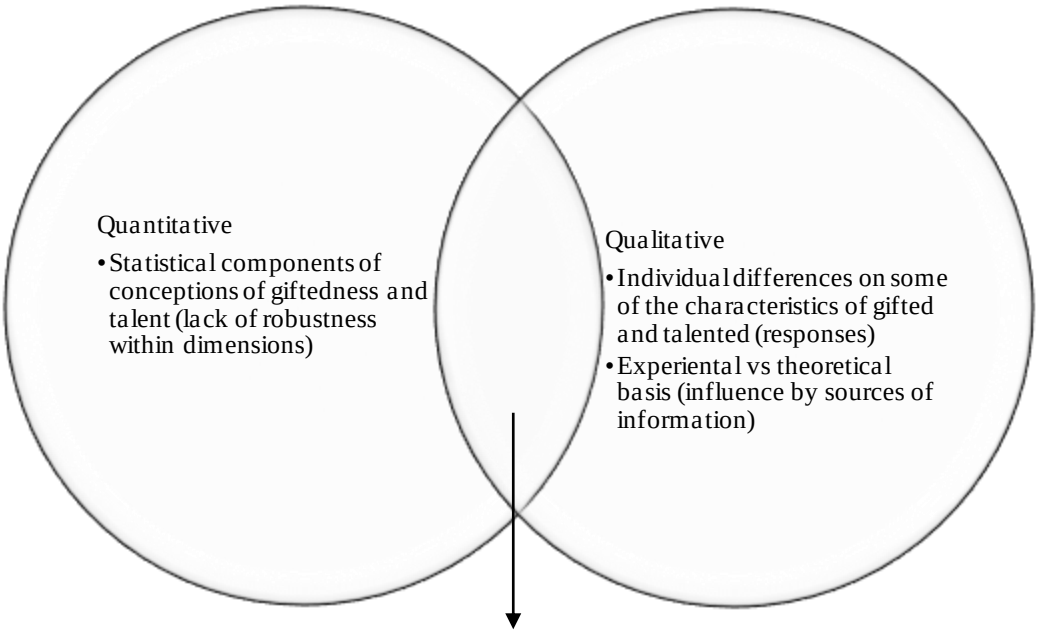
	percentages in both groups) * See **Chapter 6** for illustration.	from survey response (high percentages in both groups) * See **Chapter 6** for illustration.
Confidence	Mixed responses • A teacher rated 3 (middle rating which could be assumed as '50'50' of confidence level (as mentioned by one of the teachers) • Another two teachers rated 2 (low) In general, low rating for self indicates participants could be interpreted as an indication on low confidence. This speculative assumption was explored in interviews which indicate certain level of uncertainty. *	Mixed responses • A teacher rated 4 (high) • Another two rated 3 (middle rating which could be assumed as '50-50' of confidence level (as mentioned by one of the teachers) In general, low rating for self indicates participants could be interpreted as an indication on low confidence. This speculative assumption was explored in interviews which indicate certain level of uncertainty. * **Note**: In the context of this study, It is worth to note that high rating of confidence might not mean that teacher with longer teaching experience would nominate more accurately gifted and talented students. Such confidence might be interpreted as a hunch that might be accurate to certain point even though such hunch needs to be verified.
Knowledge and understanding on assessments for identification	Limited * Only one teachers mentioned IQ tests as the assessment of identifying gifted and talented students ** Others did not specifically mention any type of assessments such as IQ tests or other types. * Many participants raised their concern about this limitation of information on identification assessments or/and process*	Limited * Teachers acknowledged that they have limited information about the types of assessments as well as process involved in identifying gifted and talented students. ** Teachers did not specifically mention any type of assessments such as IQ tests or other types. * Many participants raised their concern about this limitation of information on identification assessments or/and process*
Perception on aspects that intrigue the participants on gifted and talented individuals	• Differences between gifted and talented students or/and individuals* • Characteristics * • Aims in life ** • Contribution to society **	• Differences between gifted and talented students or/and individuals* • Characteristics * • Education provision ** • Support to students and

	• Ability to handle such gifts or/and talents ** Teachers' responses concentrate on individuals characteristics **	parents ** Teachers concern on the teaching practice (what they can do as teachers) more which could be indicated through their responses **
Perception on the adequacy of teaching training	• Topics on giftedness are limited ** • Less emphasis on giftedness (topics taught) ** • Government roles in providing extra information about giftedness and talent ** Teachers' responses highlight their views on the 'theoretical' emphasis in their teaching training practice. No teacher raised any issue relating to teaching practice. This is because perhaps their view is limited to certain extent with limited experience in teaching (even though all of them have undergone teaching practicum for at least a semester or term. In Malaysia, one semester is equal to 14 to 15 weeks) **	• Pedagogy is targeted for normal students ** • Preparation might help to spot (initial identification) gifted and talented students ** • A gap of information between theories and practice ** From teachers' responses, it could be concluded that teachers' view on the adequacy of teaching training focuses on teaching practice. This findings show that teachers reflect on their own teaching practice when answering this question. Even though they were probed on subjects that they have taken while in teaching training programs, yet little is said about the adequacy of subjects related to giftedness **
Perception on labelling	Its usage depends on the needs and to be used with extra cautious * • Emphasises on - Humbleness (character building, not just enhancing abilities) * - Labelling for assigning education provision with specific aims and strategies (limited usage of labelling to avoid any misused of individuals' abilities) *	Its usage depends on the needs and to be used with extra cautious * • Emphases on - Humbleness (character building, not just enhancing abilities) * - Labelling for assigning education provision with specific aims and strategies (limited usage of labelling to avoid any misused of individuals' abilities) * • Labelling should not be publicised unnecessarily ** • Without any education provision, there is pointless to label **
Perception on important aspects for developing gifted education in Malaysia	Identification mechanism * • Identify the gifted and talented needs ** • Government's roles * • Specific guideline for	Identification mechanism * • Government's roles * Education provision ** • Readiness of teachers (who

	identification ** Experts ** • To design special programs for gifted and talented students ** • To assign students for specific programs suitable with their needs and ability (type and level) ** • To train students as well as teachers **	are responsible in the implementation of such programs) as well as school (in terms of facilities) ** Teachers and teaching training ** • Proper training to teach gifted and talented students **

*Shared response by both group
** A response which is only express by a specific group

Figure 9.1: A summary of both findings (Differences and overlapping aspects)



- Differences between pre service and in service teachers
  - Understanding of terms: 'gifted', 'talented' and 'gifted and talented' (descriptive and qualitative analysis)
- Lack of clear consensus of conception of giftedness and talent

9.4.3 Research question no. 3: How do Malaysian pre service and in service teachers arrive at their conceptions of giftedness and talent?

a) What are the sources of information about giftedness according to them?

b) How adequate the information in helping them to understand the concepts and issues related to giftedness?

This research question no. 2 contains two sub-questions. To answer the first sub-question, descriptive analysis was used. From the findings (as presented previously in **Chapter 6 - Section 6.6**), teachers stated that sources from the media such as newspaper and TV programmes are the main sources of information about giftedness. In this instance, it could be assumed that teachers rely on media to get information about giftedness or gifted and talented individuals. Information from the media could be seen as easier to get and cheaper as compared from another sources such as books or journals. Looking from responses from pre service and in service teachers at glance, it was found that the percentages of pre service teachers rely on books as well as journals for information on giftedness is higher than the percentage of in service teachers. In this vein, it could be assumed that since they are undergoing teaching training, thus they might easily get academic books and journals as the sources of information from their respective institutions. From qualitative data, an in service teacher (with over than 20 years of teaching experience) states her teaching experience as a source of information about giftedness (see **Table 9.3** for summary). In this instance, drawing from day to day experience dealing with students gives her an insight on a wide spectrum of students' abilities. However, this experiential knowledge is developed over the years of teaching and thus, some students who might be considered as gifted and talented might be overlooked at various stages of one's teaching practice. In this vein, to rely on one's teaching experience might be inappropriate and inefficient (to certain extent) to identify as well as assign students for specific education provision.

In addition, to answer the second sub-question which explores the adequacy of information from the relevant sources to assist teachers in their understanding about giftedness, semi-structured questionnaire and interviews were used. To begin with, teachers who were interviewed have to answer similar question posed in the semi-structured questionnaire about the sources of information on giftedness. From integration of both approaches, it was found that there is consistency of responses in which media is stated frequently as the

source of information on giftedness. In addition, when asked what kind of information is referred from such sources, a teacher commented that she wants to know more about the characteristics of gifted and talented and types of assessments used to identify gifted and talented students. However, she commented that it is difficult to find detail information on the characteristics that define giftedness as well as on assessments used in identifying gifted and talented students.

Other than assessments, another teacher illustrates the difficulty to recognise or identify gifted and talented students due to the limited information on the characteristics of giftedness from available sources (for details see **Chapter 6 – Section 6.6** and **Chapter 8 – Section 8.4**). Looking at their responses, it could be concluded that teachers aware on the importance to know the characteristics of giftedness (which related to the definitions of giftedness and how it is defined to some extent) as well as assessments to identify the students. Yet, from their responses, it seems that information from media is perceived as inadequate to provide them with such information. In this vein, in general, information from media about giftedness is targeted for a wider range of people and thus, it might not be detail and specific enough to describe characteristics of giftedness in depth. Thus, detail descriptions about the characteristics of giftedness might only be found easily from academic textbooks or journals which are targeted for specific groups of people such as students or researchers in fields related to the study of giftedness. As an example, from qualitative data, two teachers equate giftedness with high IQ. In this instance, teachers' perceptions on the characteristics of giftedness are more geared in quantifying form. Thus, other characteristics such as perfectionism which is abstract and thus assumed to be difficult to quantify are less associated with giftedness. In summary, from such responses, it could be summarised that there is need to expose the teachers with appropriate and sufficient information on giftedness in order to enhance their understanding of giftedness.

9.4.4 Research question no. 4: Are pre service and in service teachers confident in identifying students as gifted and talented?

To answer this research question, I posed open-ended questions in the semi-structured questionnaire as well as in the interview. In other words, the exploration of this issue is mainly used qualitative approach. This issue is investigated by exploring how teachers rate

their own confidence level (with range of five as the highest value which means very confident and one as the lowest value of rating which means not confident). The questions were posed to investigate the consistency of rating as well as to detect if there is any behavioural indication that showed contradictory response.

Teachers assert various reasons that influence their confidence level such as teaching experience, exposure while in teacher training that they have, information that they gain from various sources as well as available resources or facilities in schools (especially from in service teachers responses). For the pre service teachers, they assert that the limited information that they could get from teacher training courses make they feel unsure (less confident) to deal with gifted and talented students. In this instance, the issue of dealing with gifted and talented students is not only in teaching them, but also in identifying them as well. In this regards, in service teachers also claim similarly in which they feel that even though with teaching experience, yet since there is no specific training that they have undergone to deal with gifted and talented students, their apprehension could be reflected from their responses (refer to **Chapter 8** - S**ection 8.5** for details and **Table 9.3** for summary).

9.4.5 Research question no. 5: How aware do pre service and in service teachers about identification mechanism in identifying gifted and talented students?

This question was investigated using semi-structured questionnaire and interviews. Even though none of the teachers answered the question posed in semi-structured interview on this aspect, this aspect was explored by asking them again indirectly in interview (see **Chapter 8 – Section 8.6.1** for details). From teachers' qualitative responses, it seems that teachers have limited information with regards to assessments used in identifying gifted and talented students. Teachers acknowledge that they know little about the types of assessments used in identifying gifted and talented. One of the participants stated IQ tests as the key assessment to identify gifted and talented. Looking at this one particular example, it seems that giftedness is more equated with high intelligence or intellectual ability, which is only one of the multifaceted characteristics of giftedness.

In addition, when teachers were asked about any identifying procedure and/or assessments to identify students as gifted and talented that they know, some of teachers responded by raising their concern instead[174] on the needs to have appropriate training to help them in identifying gifted and talented students as well as more exposure and information on the characteristics of gifted and talented students that could help them to identify at initial or referral phase. In this instance, it could be assumed that this particular interview question triggered teachers' awareness on what they should know and upon realising that they have limited information on this issue; some teachers acknowledge that they are not quite familiar with the identifying procedure and/or assessments. In summary, teachers are not only aware that they do not know much about assessments involved in identifying gifted and talented students but also aware that they need to know more about the assessments that could be used and characteristics of giftedness well (see **Table 9.3** for summary).

9.4.6 Research question no. 6: How do pre service and in service teachers perceive these issues:

a) Intriguing aspects about gifted and talented individuals?

b) Adequacy of teaching training?

c) Labelling?

d) Important aspects in developing gifted education in Malaysia?

To answer the four sub-questions posed in this study, qualitative exploration was attempted. Teachers' responses from open-ended questions in semi-structured questionnaire and interviews are integrated to uncover some clues about how other issues related to giftedness are perceived such as labelling, for example. First, from teachers' responses on the issues that they perceive as intriguing, teachers state two common aspects: the difference between gifted and talented as well as the characteristics of giftedness (see **Table 9.3** for summary). In this study, it was found that teachers find it intriguing about the characteristics of giftedness especially in differentiating the gifted with talented. To some extent, it could be assumed that teachers perceive that there are distinct characteristics that differentiate gifted from talented. Even though this assumption is speculative, yet teachers'

[174] None of the teachers responded positively by ticking 'Yes' on a question in semi-structured questionnaire (refer to question no. 13 in the semi-structured questionnaire and **Chapter 8** - S**ection 8.6.1** for further details).

responses show underlying concern to know more about the characteristics of giftedness. In addition, by looking at their responses on the characteristics of giftedness, it could be concluded that teachers have vague idea on the characteristics of giftedness as proposed in various model or theory.

Other than the characteristics of giftedness, motivation and/or aim that influence social function and contribution by gifted and talented are also mentioned by teachers. A few of teachers want to know how gifted and talented individuals lead their lives. A teacher wonders what made Sufiah Yusof[175] (referring to one particular case of a math prodigy) chose a profession considered as a taboo in Malaysian context. The idea of having such a gift and yet involves in a profession which is deplorable according to Malaysian context, perhaps does not fit with teachers' preconceived ideas that gifted individuals should contribute to the society in positive manner. In this vein, it could be concluded that the idea of being gifted and talented relates to social expectation on gifted and talented individuals in a society -i.e. how (well) they might contribute to the society with what they have-.

In addition, teachers are also interested to know how to deal with gifted and talented students, for example in identifying and teaching the gifted and talented students. One teacher suggested that knowing the characteristics of giftedness is important prior to identifying and dealing with gifted and talented students. What does appear from teachers' responses on what intrigues them about giftedness highlight their concern more on what they should know in order to deal with gifted and talented students.

Second, when they were asked about the adequacy of teacher training that they undergo or have underwent, pre service and in service teachers hold similar notion about inadequacy of the current teacher training provided by various institutes of teacher education as well as universities that they attended. Teachers suggested that the courses offered in their respective institutions were insufficient to prepare them to teach gifted and talented students. Many teachers claimed that courses offered do not have specific emphasis on

[175] Even though, the news about her profession as a social escort was not clearly stated in any of Malaysian major newspapers, yet the profession is considered negative in Malaysia and thus it has created uproar in Malaysia especially among Malay community (this is because Sufiah's mother is a Malay Malaysian). Similar uproar could be expected if a gifted and talented individual is identified as homosexual. Homosexuality in Malaysia is still considered as a taboo and thus, homosexual identity is not something easily and openly acceptable by people in Malaysia in general.

gifted education and thus, they have limited understanding on the characteristics of giftedness as well as assessments used to identify the students as gifted and talented. As suggested by an in service teacher, teacher training might be seen as inadequate to help teachers to identify gifted and talented students, yet with teaching experience that teachers might acquire from teaching practice, they might be able to identify gifted and talented students.

In this vein, to draw strong conclusions about the inadequacy of current teacher training in various institutes of teacher education and universities in Malaysia would be inappropriate without looking at various aspects such as the needs of gifted education in Malaysia as perceived by the masses as well as government. This is because, courses offered in institutes of teacher education and universities are subjected on the educational policy set by the government. In other words, it would be impossible to develop gifted education or any educational provision with limited support from the government.

Third, in terms of labelling, teachers hold differing views on its importance even though majority of teachers agree to some extent labelling is needed. In general, teachers' view on labelling could be in relation to teaching practice and social function. A few teachers emphasised the importance of identifying over labelling in relation to the two aspects. When asked the reasons of such emphasis, teachers suggested that labelling might has negative effects on gifted and talented individuals in terms of their personal attitudes as well as other acceptance and expectations on them. In this instance, social contribution as well as action are emphasised indirectly by teachers. However, even though teachers might have some reservations on the importance of labelling, in general teachers concur that labelling is appropriate to be used sparingly for two reasons: to provide education provision that fulfil the needs of gifted and talented students and to help gifted and talented students to enhance their ability (abilities).

Fourth, as previously discussed in details in **Chapter 8 – Section 8.7.4,** there are interrelated four aspects that teachers perceived as important in developing gifted education: identification (e.g. guideline on the characteristics of giftedness and talent), experts' involvement (especially the government), teachers' participation and education provision. From the findings, it was found that teachers do aware on the importance to understand the

needs of gifted and talented students prior to identifying them as well as to have some 'guideline' (in terms of the characteristics of giftedness) that they can use in identifying gifted and talented students.

Also, teachers suggested that since education system in Malaysia is primarily controlled by the government, therefore it is expected that the government should be more proactive in developing gifted education in Malaysia. Other than that, teachers also emphasise the needs for experts in gifted education. One teacher elaborated on the roles of experts in gifted education which are primarily on developing special education programs, apart from identifying the gifted and talented students. Even though, the emphasis on the development of gifted education seems to be skewed towards the government and experts in gifted education, yet teachers acknowledge that there should be mutual efforts from parents as well as teachers who directly involve dealing with gifted and talented students. Other than that, teachers also perceive that education provision (e.g. specific gifted programs, special curriculum) should not only be implemented but also teachers should be trained to implement such programs for the gifted and talented students. In summary, teachers view that their readiness (in terms of teaching training, experience etc.) and school facilities are considered crucial elements for special education provision for the gifted and talented students.

9.5 Limitations

In this thesis, the limitations of this study have been discussed throughout but in general with direct reference to a specific aspect or part of the research or literature. Thus, in this section, the limitations of this study would be discussed in a broad and summative manner. Also, general assumptions that might have influenced the validity or reliability of the findings are highlighted. This overview does not mean to undermine the conclusions specifically or the findings generally. It is aimed that this overview would provide a frame in which the limitations exist that allows future reader to think and review the findings about this study exclusively without over-interpretation.

Literature and studies on giftedness specifically on the conception of giftedness and talent are scarce in Malaysia as presented in **Chapter 1** and **3** previously in details. Thus, in this

study, it is hard to make comparison with previous studies at theoretical level. In this vein, an ideal comparison would be with existing any model or theory of giftedness as proposed by researchers like Renzulli (1978), Sternberg and Zhang (1995) or Gagné (2010b; Gagné, 2010a) as discussed in **Chapter 2** in details. However, such comparison might not be suitable in this study because findings from this study show that the conception of giftedness and talent as perceived by teachers are not robust enough as a model. This lack of direct comparison means that the findings in this study could only be compared based on specific and distinct findings. In this vein, a generic comparison is more appropriate that might serve as guidance for potential follow up studies.

In this study, even though there is no clear model of conception of giftedness and talent might be developed from its findings, yet a close examination on qualitative data especially show that there are similarities in terms of some characteristics proposed in any model or theory of giftedness with Malaysian teachers' conception of giftedness and talent (as presented in **Table 9.1**). For example, Malaysian teachers regard intellectual ability, creativity, domain specific of ability, demonstrability and social recognition and value as a part of their conception of giftedness and talent. These characteristics could be found in various propositions in models or theories of giftedness by researchers such as Renzulli (1978) Sternberg and Zhang (1995) and Gagné (2010b; Gagné, 2010a), various government official documents such as in Marland Report (1971), UK National Strategies (DfCSF, 2008b; DfCSF, 2008a) and a report on world survey (Freeman et al., 2010) as well as studies such as by Roncorini et al. (2010), Leavitt (2009) and Lara (2009).

In the present study, one of the limitations is the usage of terminology and definitions such as 'gifted' and 'talented' in which the emphasis is different from one model or theory to another even though some researchers regard 'gifted' and 'talented' as similar. In addition, as what various researchers have proposed and agreed, in general any single definition of giftedness might still be challenging to study given the fact that giftedness is not a unitary phenomenon but a complex set of developmental phenomenon which is dependent on many underlying processes and relating factors. From findings in this study as discussed in **Chapter 8** (see **Section 8.2** and **Section 8.3**) could reflect the complexity of the conception of giftedness and talent as perceived by teachers in Malaysia. In relation to this study, it could be summarised that there are differences among teachers on the key concepts of gifted and

talented when asked to provide qualitative response (see **Table 9.3** for details). Based on the responses, it could be concluded that teachers perceive gifted individuals are different from talented individuals. In this vein, the term 'gifted and talented' is not used as a synonymous term rather as a different and separate term. The similarity of this usage could be found in the United Kingdom in which gifted and talented is considered as two different groups of individual with extraordinary abilities as mentioned in **Chapter 3 – Section 3.2**.

For the questionnaires especially the structured questionnaire, even though the items were developed and designed to avoid language ambiguity and extra care has been taken into consideration during the administration of both questionnaires (e.g. structured and semi-structured questionnaires), yet it is still possible that participants interpret and understand the items semantically different. For the interviews, any ambiguity from participants' responses was carefully noted during the interview administration and probing was used to seek clarification and confirmation of participants' responses. However, it is not impossible that participants might still be withholding some information regardless of probing.

Some of the research questions were explored mainly qualitative and thus, there is lack of empirical data to provide any statistical evidence on those particular issues. Given the limited participants involved in the qualitative data collection, making strong conclusions on the basis of this data might be seen as inappropriate but there is certainly valuable information could be uncovered from this data for future study.

9.6 Implications

In this section, a number of possible implications are discussed in the context of contributions and conclusions. The implications are distinctly divided into two: (a) those that refer to possible future studies that may clarify the conception of giftedness and talent in Malaysia, its elements or related issues thoroughly from various angles and aspects and (b) those where the findings of this study might have beneficial contributions and effects on educational policy and practice. Exploration of each of these implications is discussed in turn.

9.6.1 Reference for future studies

The findings in this study reflect the theoretical and conceptual propositions that there is no consensus and standardised conception of giftedness and talent, and in this case, from specific group of participants -i.e. pre service and in service primary school teachers-. Further research is needed to explore the conception of giftedness and talent from general population that would tackle some of the limitations of the findings from this study and its interpretation. This would be attempted to discover whether their conception in fact different from the findings of this study which might be appeared to be the case, or whether some unexplored variables provide additional explanation in this regards. Further investigations are needed in order either to confirm or confute with the present findings from this study. In this instance, it is suggested that future studies could use similar participants as in this study i.e. teachers for direct comparison or use other participants with different characteristics for generic comparison.

Also, this study might be viewed as significant at present time especially with the current development of gifted education in Malaysia. However, it is worth to note that this study could only provide temporal findings in which it gives an insight about teachers' conception of giftedness and talent in Malaysia in current time specifically when this study was conducted. Thus, a comparison of findings from this study can be accurately attempted for the time period in which it was done. In this instance, continuous studies should be attempted to explore the changes of conception of giftedness and talent over a period of time for more appropriate comparison.

Other than comparison studies, there is a need for studies using longitudinal designs to explore any change in the conception of giftedness and talent as held by various groups of people. With the fact that there were some sorts of programs for gifted and talented student such as BAKA Project in the 80s, it shows that awareness (by the Malaysian government in general) on the importance of programs for gifted and talented has existed and thus, the implementation of such programs. However, such programs were short lived because the definitions and conception of giftedness and talent hold by various groups of people remain unclear. This perhaps contributes to the discontinuation of such programs. A longitudinal study that follows the conception of giftedness and talent of teachers might

provide valuable information on the changes or stability on the perceived characteristics of giftedness and talent.

Further studies such as the two discussed above need not be exact replication or reconstruction of the methods used in this study. Even though this study has provided some information on the conception of giftedness and talent by teachers, yet it is inconclusive to be directly compared with the existing literature for the purpose of adding on knowledge. In this instance, this study has its flaws and these flaws should be addressed in later studies. Overall, this study has raised indirectly questions *why* there is no 'robust' or 'clear' conception of giftedness and talent as perceived by teachers in Malaysia. This opens up abundant possibilities for further inquiry.

Finally, even though the use of face to face interviews to gather qualitative data was a small success (with only female participants) yet this raises the need for further exploration involving male participants in future study. It would be interesting to explore conception of giftedness and talent qualitatively from male participants' angle. The findings from such study could be compared with the findings from this study and thus, might be able to give more thorough explanation on the conception of giftedness and talent by teachers.

9.6.2 Educational policy and practice

The findings of this study suggest some possible implications with regards to policy and practice for the gifted and talented, implications which are arguably relevant and directly targeted on the current teacher training programs. This thesis supports the propositions that there is no consensus on the conception of giftedness and talent due to varied emphasis on the characteristics that define gifted and talented. The quantitative data in particular provides evidence that show the conception of giftedness and talent as perceived by teachers are diverse. From the qualitative data, it shows that teachers are arguably similar with one another more than they are different in their conception of giftedness and talent in general.

In addition, even though it was found that the confidence level among teachers to identify gifted and talented students are somewhat low, it could be speculatively associated to their

awareness of the limited information that they have and their general understanding on the characteristics of gifted and talented. This shows that there are needs to provide teachers with appropriate information as well as training in dealing with gifted and talented students through teacher training for the pre service teachers as well as additional training courses such as in service training courses or known as *latihan dalam perkhidmatan* for the in service teachers. Such attempts are also in line with the establishment of Pusat PERMATApintar Negara (PPpN)[176] in early 2009 which aims to provide gifted and talented students with a comprehensive and holistic education provision (Noriah et al., 2009). However, such planning would be less meaningful and could be short lived if it is not supported by teachers at school level (through education provision offered in schools) on daily basis. In this vein, teachers need to be trained specifically to handle programs for the gifted and talented students at school level in the future. As shown in a study by Bangel (2010), pre service teachers who undergone a special training course as well as eight week practicum were found to be more confident on their overall teaching abilities and more aware on the needs and characteristics of gifted and talented students.

Even though currently there is no any specific provision within the Malaysian Education Act 1996 on gifted education, yet the establishment of Pusat PERMATApintar Negara (PPpN) is expected to enhance the development of gifted education in Malaysia. At the moment, the centre just offers a short course program which is conducted during school vacation known as The School Holiday Camp Program (for details refer to Rosadah et al. (2009)). Thus, it could be said that there is no continuous education provision for gifted and talented students at current time. The centre aims to provide two more programs known as The High School Program and The Pre-University Program in future. In this instance, there is need for operational definitions of students who would participate in such programs. At the point of writing, it is still unknown *how* these two programs would be operated. Based from the findings in this study, most teachers have little information with regards to these plans.

Other than that, initiatives like PERMATApintar no doubt can help not only to identify gifted and talented students in Malaysia but also to provide special provision, but without continuous financial aid as well as commitment from various people as liaisons and supporters of the development of gifted education in Malaysia, the fate of the existence and

[176] Pusat PEMATApintar Negara (PPpN) is a centre for gifted and talented for Malaysian gifted and talented children which was established in early 2009. It adapts some of the activities by John Hopkins University Center for Talented Youth. The physical building for this centre is still under construction at the moment.

effectiveness of program such as PERMATApintar will not fully known in long term run. In this instance, to ensure teachers' commitment in teaching gifted and talented students, one of the things that could be done is to prepare them.

9.7 A final thought

The initiation of this thesis was based on the media exposure of a mathematically gifted eight year old boy in 2006[177] as well as my own experience teaching undergraduates a subtopic on giftedness (one of the subtopics in an Introduction to Educational Psychology course). By examining various definitions and conceptions of giftedness and talent from different models or theories of giftedness, it could be concluded that any model or theory of giftedness provides an ideal description and illustration of the characteristics of gifted and talented individuals. Supported by various research findings, those models or theories of giftedness are hard to resist. Yet, what and how giftedness and talent is perceived by educators such as teachers, for example in this study, do not reflect well with the available models or theories which have been shown in findings of other studies too (as discussed in **Chapter 4** in details). It is not to say there is little use of such models or theories rather the conceptions of giftedness and talent at practical level is 'messier' than what is provided and assumed at theoretical level (as mentioned in **Chapter 2**). In this instance, what is discovered in this study shows that even though teachers might be assumed to hold similar view on the characteristics of giftedness as proposed and provided in any available model or theory of giftedness, at practical level, teachers do have diverse conception of giftedness and talent. As shown in this study, due to limited exposure on the information relating to giftedness and lacking in understanding on the multifaceted characteristics of giftedness, teachers' confidence to identify gifted and talented students might be affected. In this study, I do not explore their readiness to teach gifted and talented students given the fact that there is no specific teacher training program for gifted education (at the point of writing) and thus, I leave that issue to be explored further in another study in future. Last but never the least, this study was conducted with specific aims and thus, its strengths and limitations should be considered with unconditional yet critical view.

[177] The news about this math prodigy was featured in the local newspapers. For more details, see Koh (2006)and Norliza (2006).

Appendices

Appendix 1
Email from Ungku A. Aziz (received on June 4, 2010)

From: Sharimar (sharimar@azair.com.my)
To: hadijah_jaffri@yahoo.com;
Date: Fri, June 4, 2010 2:27:01 AM
Cc:
Subject: Re: How can I get in touch with Prof Ungku Aziz? Haven't got any reply from him

3/6/2010

Dear Hadijah,

Thank you for your email dated 20th May 2010. I am trying to dig as deeply as possible into my memory about the BAKA project.

The whole thing orbits around the arrival of the boy Hadafi who was originally discovered by somebody in Utusan Malaysia. I persuaded the late Professor Azman Wan Chik to try and setup the BAKA project. About this time Dato' Omar bin Mohd Hashim supported the project. I personally met the bright boy and gave him some tests but at that time I was very busy with other things concerning the development of the Universiti Malaya and so I didn't become much involved.

I will try to find somebody from Faculty of Education who worked together with Professor Azman. Otherwise, I am afraid I can't be more helpful.

You may like to get in touch with Dato' Jins Shamsudin who is now a Senator. He produced the film with Noor Kumalasari and the theme involved the character like Hadafi.

Another line that maybe worth thinking about is a full biography of Hadafi. Today he must be middle aged Ustaz living in Perak. This may require a field visit to Malaysia and maybe difficult for you. Nevertheless, it's an idea.

These things are subject 'Hangat-hangat tahi ayam'. I am sorry I can't be more helpful. I wish you every success in your endeavours.

Wassalam.

Profesor DiRaja Ungku A. Aziz

Appendix 2

A summary of Garrison's (1917), Coys (1918) and Hollingworth's study (1922)

Garrison's (1917)	Coy's (1918) study on M.F.	Hollingworth's study (1922)
- Described psychological and physical traits of a gifted child known as E. - E was assessed through Stanford-Binet IQ test. - Parental background data (extensively on education qualification) were presented - Both parents were highly educated	- M.F was identified in a study by Whipple (Coy was Whipple's assistant) - M.F was subjected on various group tests (she scored above average on 10 out of 14 group tests) - Other than physical and test scores, family background as well as sociability were also explored	- A longitudinal study on E (which was conducted in 1917 earlier) - E was assessed again using IQ tests (his scores was 187) as well as other assessments (scholastic assessments which were specifically meant for his university entrance) - It was found that his abilities and interest that he has shown during elementary remained stable during adolescence. Since he was admitted to Columbia university early (at the age of 13)

Appendix 3

Summary of implicit conceptions of giftedness

Implicit conception	Emphasis	Reference
Pentagonal implicit theory	• Five criterion of giftedness: excellence, rarity, productivity, demonstrability and value • Relativistic view based on social evaluation of gifts/ talents that a person has	Sternberg, R. J. and Zhang, L.-f. (1995). What do we mean by giftedness? A pentagonal implicit theory. *Gifted Child Quarterly*, 39 (2), pp. 88-94. SAGE (Online) Available at: http://gcq.sagepub.com/cgi/reprint/39/2/88. (Accessed: 3 November 2007)
Three-ring conception	• Three components of giftedness: above average ability, task commitment and creativity	Renzulli, J. S. (1978). What makes giftedness? Reexamining a definition. *The Phi Delta Kappan*, 60 (3), pp. 180-261. JSTOR (Online) Available at: http://www.jstor.org/stable/20299281. (Accessed: 26 February 2008)
Giftedness as creative productivity	• Giftedness as potential gifts/ talents - Dynamic, not static - Nurturing potentials vs. labelling - Variety of alternatives or options for meeting the needs • Schoolhouse giftedness: lesson-taking giftedness • Creative productivity: development of original material and products	Treffinger, D. J. and Renzulli, J. S. (1986). Giftedness as potential for creative productivity: Transcending IQ scores. *Roeper Review*, 8 (3), pp. 150-154. INFORMAWORLD (Online) Available at: http://www.informaworld.com. (Accessed: 4 May 2010)

Appendix 4

Summary of explicit conceptions of giftedness

Explicit conception	Emphasis	Reference
Componential theory of giftedness	• Four components: metacomponents, performance components, interaction among components and kinds of components, acquisition, retention & transfer components • Hierarchical intellectual traits (cognitive processes) • High quality and quantity of interaction among the various kinds of components (differentiate gifted and talented individuals) •	Sternberg, R. J. (1981). A componential theory of intellectual giftedness. *Gifted Child Quarterly*, 25 (2), pp. 86-93 SAGE (Online) Available at: http://gcq.sagepub.com/content/25/2/86. (Accessed: 31 August 2010)
Triarchic theory of human intelligence	• Types of intellectual traits (domains) • Three components: componential, experiential and contextual • Three attributes of giftedness: analytical, critical and practical	Sternberg, R. J. (1985). *Beyond IQ: A triarchic theory of human intelligence*. Cambridge: Cambridge University Press.
Giftedness as talent development	• Two aspects remain consistent throughout 25 years of his proposition - Catalysts - Ability domains • Ability domains: different dimensions rather than specific characteristics of giftedness • Interplay of chance, internal and external catalysts are influential factors in the development of natural abilities (mental and physical abilities)	a) Gagné, F. (1985). Giftedness and talent: Reexamining a reexamination of the definitions. *Gifted Child Quarterly*, 29 (3), pp. 103-112 SAGE (Online) Available at: http://gcq.sagepub.com/content/29/3/103. (Accessed: 31 August 2010) b) Gagné, F. (1991). Toward a differentiated model of giftedness and talent in Colangelo, N. and Davis, G. A., *Handbook of gifted education*. (Eds). pp. 65-80. Boston: Allyn & Bacon. c) Gagné, F. (1995). From giftedness to talent: A developmental model and its impact on the language of the field. *Roeper Review*, 18 (2), pp. 103 -111. (Online) Available at: http://dx.doi.org/10.1080/027831995095537

		09. (Accessed: 31 August 2010) d) Gagné, F. (2000). Understanding the complex choreography of talent development through DMGT-based analysis. *International Handbook of Giftedness and Talent*.in Heller, K. A., Mönks, F. J., Subotnik, R. and Sternberg, R. pp. N/A. (Online) Available at: http://www.credoreference.com/ (Accessed: 25 August 2010) e) Gagné, F. (2004). Transforming gifts into talents: The DMGT as a developmental theory. *High Ability Studies* 15 (2), pp. 119-147. f) Gagné, F. (2010) *Building gifts into talents: Brief overview of the DMGT 2.0.* Perspectives on the evaluation of giftedness: From Binet to today - European Council for High Ability (ECHA) 2010 conference, 7-9 July 2010. Université Paris Descartes, Paris. Available at: http://www.echa2010.eu/pdf/DMGT%202.0%20EN%20overview.pdf. (Accessed: 29 July 2010) g) Gagné, F. (2010) *The DMGT 2.0.* Perspectives on the evaluation of giftedness: From Binet to today - European Council for High Ability (ECHA) 2010 conference, 7-9 July. Université Paris Descartes, Paris.
Pyramidal talent development	• Four bases of talent development: personality attributes, minimum general ability, specific talent in a domain and environmental aspects • Personality attributes: among key attributes e.g. perfectionism, insight etc.	Piirto, J. (1995). Deeper and broader: The pyramid of talent development in the context of a giftedness construct. *The Educational Forum*, 59 (4), pp. 363-370. INFORMAWORLD

	• Environmental aspects which influence development of giftedness: parents, education provisions etc. • Minimum intellectual ability (for social contribution and function) • Ability domains: range from arts to science etc.	(Online) Available at: http://pdfserve.informaworld.com. (Accessed: 6 May 2010)
Multidimensional aspects of giftedness	• Multifactorial ability construct • Related to noncognitive traits • Social moderators • Multifaceted characteristics that intertwine together in the development of gifts and talents	Heller, K. A. and Schofield, N. J. (2000). International trends and topics of research on giftedness and talent. *International Handbook of Giftedness and Talent*. In Heller, K. A., Mönks, F. J., Subotnik, R. and Sternberg, R. (Eds.) pp. N/A. (Online). Available at: http://www.credoreference.com/entry/estgift/international_trends_and_topics_of_research_on_giftedness_and_talent. (Accessed: 25 August 2010)
Multiple intelligences	• Manifestation of giftedness through varied types of intelligences • Individual differences are based on the types as well as intensity levels of each intelligence • Context plays role in how the varied domains of intelligences will be valued by society (time and space related)	Gardner, H. (1983). *Frames of mind : The theory of multiple intelligences*. London: Heinemann.
4x4 model of structure of giftedness	• Three components are proposed: categories of intelligences (general and original), ability levels and learning environments (family, school and community)	Milgram, R. M. and Hong, E. (1994). Creative thinking and creative performance in adolescents as predictors of creative attainments in adults: A follow-up study after 18 years In Subotnik, R. F. and Arnold, K. D., (Eds.), *Beyond Terman: Contemporary longitudinal studies of giftedness and talent*. pp. 212-228. New Jersey: Ablex Publishing Corporation.

Appendix 5

A comparison between Renzulli's (1978; 1986) and Haensly et al. (1986) model

Renzulli's (1986) three ring conception of giftedness	Haensly et al. (1986) model of giftedness
Well above average ability **General ability:** High levels of abstract thinking, verbal and numerical reasoning, spatial relations, memory and word fluency; Adaptation to and the shaping of novel situations encountered in the external environment; The automatisation of information processing; rapid, accurate, and selective retrieval of information **Specific ability:** The application of various combinations of the above general abilities to one or more specialised areas of knowledge or areas of human performance (e.g. the arts, leadership, administration) The capacity for acquiring and making appropriate use of advanced amounts of formal knowledge, tacit knowledge, technique, logistic, and strategy in the pursuit of particular problems or the manifestation of specialised areas of performance The capacity to sort out relevant and irrelevant information associated with a particular problem or area of study or performance **Task commitment** The capacity for high levels of interest, enthusiasm, fascination, and involvement in a particular problem, area of study, or form of human expression The capacity for perseverance, endurance, determination, hard work, and dedicated practice Self-confidence, a strong ego and a belief in one's ability to carry out important work, freedom from inferiority feelings, drive to achieve The ability to identify significant problems within specialised areas; the ability to tune in to major channels of communication and new developments within given fields	**Coalescence** Mixture of extraordinary abilities that gifted and talented exhibit through behaviour, performance, achievement and such that are measurable Interrelated metacognitive, metacreative and meta-awareness aspects **Context** The quality and eventual worth of any response must be inevitably be detrmined in relation to the particular set of situational factors within which that reponse is given The staying power of the type of response that has earned the label of extraordinary or eminent depends on its applicability to times and palces that go beyond the original setting that elicited the response (p. 139) **Conflict** Gifted responses are the result of encountering and solving obstacles It serves to direct the responses by gifted and talented individuals (and thus, it is perceived positively) When challenge is lacking, apathy ensues and there is an increasing failure to use one's potential gifts and talents (p. 142) **Commitment** Persistence or 'stick-to-itiveness' (p. 142) Commitment constantly seeks breakthroughs and more fruitful, alternative paths to developing the idea, topic, or principle, yet consistently seeks to promote the nuclear idea (p. 142) Comittment also appears to permit the individual to deal rationally with obstacles (p. 143)

Setting high standards for one's work; maintaining an openness to self and external criticism; developing an aesthetic sense of taste, quality and excellence about one's own work and the work of others **Creativity** Fluency, flexibility and originality of thought Openness to experience; receptive to that which is new and different (even irrational) in the thoughts, actions and products of oneself and others Curious, speculative, adventurous, and 'mentally playful'; willing to take risks in thought and action, even to the point of being uninhibited Sensitive to detail, aesthetic characteristics of ideas and things; willing to act on and react to external stimulation and one's own ideas and feelings (Renzulli, 1986, p. 75)	

Appendix 6

Gagné's model and its transitions

Model	Year	Feature	Reference
Differentiated Model of Giftedness and Talent (DMGT)	1985	• Giftedness and talent are at different spectrum • Five ability domains are introduced (general and specific): intellectual, creative, socio-emotional, sensori-motor and others • Giftedness is perceived as innate • Three catalysts –i.e. environment, personality and motivation • Not include: a) Chance is not included as a catalyst or influential determinant for the development of gifts to talents b) The percentages of gifted population in comparison to peers are not included in the definition of gifted and talented.	Gagné, F. (1985). Giftedness and talent: Reexamining a reexamination of the definitions. *Gifted Child Quarterly*, 29 (3), pp. 103-112 SAGE (Online) Available at: http://gcq.sagepub.com/content/29/3/103. (Accessed: 31 August 2010)
Differentiated Model of Giftedness and Talent (DMGT)	1991	• Giftedness comprises of aptitude domains (the domains are similar with previous version). Socio-emotional domain is changed to socioaffective domain. • Examples of talents are presented in this version. • The catalysts are divided into two -i.e. intrapersonal and environmental- • Learning factor (including practice or training) is included intertwining with the two main catalysts. • The percentages of gifted population is proposed (15% of population) • Not include: a) Chance is not included in the model	Gagné, F. (1991). Toward a differentiated model of giftedness and talent in Colangelo, N. and Davis, G. A., *Handbook of gifted education*. (Eds). pp. 65-80. Boston: Allyn & Bacon.
Differentiated Model of Giftedness and Talent (DMGT)	1995	• Examples on each ability domains are presented for illustration. Sociomotor domain is changed to perceptual/motor domain. • Learning/training/practice is considered as developmental processes to transform gifts into talents • The catalysts are proposed to have negative and positive impacts on the developmental processes	Gagné, F. (1995). From giftedness to talent: A developmental model and its impact on the language of the field. *Roeper Review*, 18 (2), pp. 103 -111. (Online) Available at: http://dx.doi.org/10.1080/02783199509553709. (Accessed: 31 August 2010)

		• Intrapersonal catalysts are divided into physical and psychological • Environmental catalysts are divided into surroundings, persons, undertakings and events • Talents are ascribed to fields relevant to school-age individuals • The percentages of gifted population is changed to 10%, instead of 15% • Differentiate the use of 'precocious', 'able', 'genius' and 'prodigy'. Even though others have proposed such terms in association with giftedness, Gagne has his own supposition on the appropriate use of those terms in relation to giftedness. • Not include: a) Chance is not included in the model	
Differentiated Model of Giftedness and Talent (DMGT)	2000	• Giftedness relates to natural abilities, whereas talent relates to systematically developed skills. • There are four domain for natural abilities -i.e. intellectual, creative, sociaffective and sensorimotor- • Chance is proposed to influence natural abilities, intrapersonal and environmental catalysts. • For the development processes, learning/training/practice is replaced with informal/formal learning and practising • Intrapersonal catalysts are comprised of physical, motivation, volition, self-management and personality. • Environmental catalysts include milleu, persons, provisions and events. • Positive and negative impacts could present in both catalysts which might influence the development processes.	Gagné, F. (2000). Understanding the complex choreography of talent development through DMGT-based analysis. *International Handbook of Giftedness and Talent*. In Heller, K. A., Mönks, F. J., Subotnik, R. and Sternberg, R. pp. N/A. (Online) Available at: http://www.credoreference.com/ (Accessed: 25 August 2010)
Differentiated Model of Giftedness and Talent (DMGT) Pre 2.0 version	2004	• The sub-catalysts in the intrapersonal catalysts are reorganised into two main groups –i.e. physical/mental characteristics and self-management (which includes awareness of self/others and motivation/volition.	Gagné, F. (2004). Transforming gifts into talents: The DMGT as a developmental theory. *High Ability Studies* 15 (2), pp. 119-147.
Differentiated Model of Giftedness and Talent (DMGT)	2007/ 2008	• Natural abilities are divided into two main domains -i.e. mental (intellectual, creative, social and perceptual) and physical	Gagné, F. (2010) *Building gifts into talents: Brief overview of the DMGT 2.0.* Perspectives

2.0 – Condensed version Alpha version		(muscular and motor control). • Chance is placed (differently) which underpins natural abilities, the two main catalysts and also developmental process (chance's fields of influence cover the aspects mentioned). • The environmental catalysts are revised. There are only three sub-catalysts -i.e. milieu, individuals and provisions-. • The intrapersonal catalysts are revised into two sub-groups -i.e. traits (physical and mental) and goal-management (awareness, motivation and volition)-. • Developmental processes comprise of activities, progress as well as investment. • Talent is changed to competencies. It is divided into academic and non-academic fields.	on the evaluation of giftedness: From Binet to today - European Council for High Ability (ECHA) 2010 conference, 7-9 July 2010. Université Paris Descartes, Paris. Available at: http://www.echa2010.eu/pdf/DMGT%202.0%20EN%20overview.pdf. (Accessed: 29 July 2010)
Development Model of Natural Abilities (DMNA)	2010	• The basis for talent development is genotypic foundations -i.e. physiological and anatomical phenotypes-. • Behavioural phenotypes are the outer layer of the foundations. • Developmental process comprise of maturation as well as informal learning and exercise. In this model, formal learning is not highlighted because it is perceived that what differentiate between gifted and talented individuals with non gifted and talented is the chance as well as educational provision that they might receive from learning. Since formal learning is somehow could be interpreted as imposed on everybody through education system, thus it is perceived that individuals might have equal chance to learn formally. • Unlike previous model, in this model, talents are perceived not emerged from the interaction of gifts, environmental, intrapersonal and developmental process. Rather, natural abilities emerge as a result of composition of genotypic phenotypes, developmental process, environmental and intrapersonal catalysts.	Gagné, F. (2010) *The DMGT 2.0.* Perspectives on the evaluation of giftedness: From Binet to today - European Council for High Ability (ECHA) 2010 conference, 7-9 July. Université Paris Descartes, Paris.

Appendix 7

Pre pilot open-ended questionnaire

A. Notions of gifted and talented

1. What do you consider to be the most important factors in determining whether a student is gifted?

1	
2	
3	
4	
5	

2. What do you consider to be the most important factors in determining whether a student is talented?

1	
2	
3	
4	
5	

3. Please list five qualities or characteristics of gifted individuals from one to five (1= most important quality or characteristics, 5= least important)

1	
2	
3	
4	
5	

4. Please list five qualities or characteristics of talented individuals from one to five (1= most important quality or characteristic, 5= least important)

1	
2	
3	
4	
5	

B. Related aspects in gifted education

1. Please list some of the issues that intrigue you about gifted individuals as well as talented individuals from one to five (1= most intrigue, 5= less intrigue)

1	
2	
3	
4	
5	

2. Please list up to five questions you have about giftedness (1= most important, 5= least important)

1	
2	
3	
4	

5	

3. Do you think if there are any differences between gifted and talented individuals? Please tick where appropriate.
   ☐ Yes ☐ No
   Please state your reason:
   _____
   _____

4. Where do you get information about gifted individuals as well as talented individuals? Please tick where appropriate (you can tick as many as you like and there is no limit to your answer).
   ☐ Media (such as newspaper, TV, radio etc.)
   ☐ Books
   ☐ Academic journals
   ☐ Newsletter/s of organisation
   ☐ Formal training such as University course
   ☐ Workshops or seminars
   ☐ Others; please specify: _____

5. How adequate do you feel your teaching training (subjects offered by the university where you are studied/studying) in preparing you to identify gifted students and talented students in the future? Please tick your response:
   ☐ Very adequate ☐ Adequate
   ☐ Very inadequate ☐ Inadequate
   ☐ Not sure

6. Are you confident to identify students as gifted or talented?
   ☐ Yes ☐ No
   Please state your reason:
   _____
   _____

7. Please indicate in which aspect of educational training you would like to receive further training in gifted education.

8. What do you consider to be most important elements in establishing a new method or program in identifying and assigning gifted students and talented students? List up to five elements indicating order of importance (1=most important, 5= least important)

1	
2	
3	
4	
5	

Appendix 8

Pre pilot questionnaire

A. Notions of gifted and talented students

1) Some frequent conceptions of giftedness are listed below. Please tick your response to indicate the degree of agreement:

		(1) Strongly Agree	(2) Agree	(3) Disagree	(4) Strongly Disagree
1	The performance of gifted and talented students can be enhanced through intervention	1	2	3	4
2	Gifted and talented can be flourished without educational or little extra educational intervention	1	2	3	4
3	Giftedness is a social and cultural concept	1	2	3	4
4	It is desirable to be in a gifted program	1	2	3	4
5	It is desirable to be labelled as gifted				
6	It is important for people to recognize gifted individuals other than teachers and parents	1	2	3	4
7	IQ tests are better predictor than other non-test measures such as behavioural checklist, portfolios etc	1	2	3	4
8	Exceptionally high achievers do not typically fit in well with same age children in terms of their educational needs and	1	2	3	4
9	It is better to focus on one area of giftedness	1	2	3	4
10	Gifted students are clever and inventive, able to evaluate, process and order complex information	1	2	3	4
11	Gifted students are more cognitively complex than others in which they are able to handle conflicting information better and make better judgments	1	2	3	4
12	Gifted and talented students show more perseverance	1	2	3	4
13	Gifted individuals are divergent thinkers	1	2	3	4
14	Gifted and talented are marked by exceptional academic achievement	1	2	3	4

2) In your view, based on your experiences and educational training that you have gained, gifted and talented students exhibit: (please tick all relevant boxes)

	(1) Strongly Agree	(2) Agree	(3) Disagree	(4) Strongly Disagree
a. Extraordinary curiosity	☐	☐	☐	☐
b. Ability to see relationship between ideas/factors	☐	☐	☐	☐
c. Excellent memory	☐	☐	☐	☐
d. Ability to tolerate cognitive ambiguity	☐	☐	☐	☐
e. Broad perceptual sensitivity	☐	☐	☐	☐

f.	Long concentration span	☐	☐	☐	☐
g.	Task commitment	☐	☐	☐	☐

3) In your view, are teachers able to be value-neutral or value-free in the context of identifying gifted and talented students? (1) Yes ☐ (2) No ☐
Please clarify your reason
_____
_____

4) Are you confident you could identify gifted and talented in the future (when you are a teacher)?
(1) Yes ☐ (2) No ☐
If you answer yes, please specify your level of confidence as indicated below:

Strongly Confident ☐ Confident ☐ Fairly Confident ☐ Not confident ☐

5) Is there anything else you would like to say about your confidence in identifying students with gifts or talents (if you answer either yes or no)?
_____
_____
_____

B. Optional section

1) If you have working with gifted and talented students or interested to be interviewed at a later stage, please leave your name, address and contact details (email address or/and h/p no.):
_____
_____

2) If you would like to receive a brief report or my research, please leave your name and address:
_____
_____

3) Please tick the length of time it would take to complete the questionnaire.

(1) approx. 25 mins ☐ (2) approx. 30 mins ☐
(3) approx. 35 mins ☐ (4) approx. 40 mins ☐
(5) approx. 45 mins ☐ (6) approx. 50 mins ☐
(7) approx. 55 mins ☐ (8) approx. 1 hour ☐
(9) more than 1 hour ☐, please specify the time : _____

Appendix 9

Participants for pilot study

№	Participants	Total
1	Pre service Universiti Teknologi Malaysia	 **114**
2	In service SK Ulu Tiram SK Seri Kota Puteri 4 SK Sg Tiram	**40** 15 15 10

Appendix 10

Total number of primary schools in Malaysia and specifically in Johor

No	Type of schools	Total	Total in Johor only
1	National	5,795	603
2	National Type (Chinese)	1,292	214
3	National Type (Tamil/Indian)	523	179
4	Special Education	28	3
5	Islamic school (Government subsidiary)	16	0

Appendix 11

Ratio of graduate and non-graduate primary schools teachers in Malaysia (2008)

№	Levels of education / Types of school	Graduate				Non graduate			
		Trained		Untrained		Trained		Untrained	
		Male	Female	Male	Female	Male	Female	Male	Female
1	National	10 676	21 038	1 945	5 984	45 470	80 699	667	1356
2	National type (Chinese)	831	3 809	359	437	3 557	22 655	423	2 299
3	National type (Tamil/Indian)	289	785	15	186	1 198	4 521	111	791
4	Special education	46	114	0	2	117	327	0	0
5	Islamic school (Government subsidiary)	4	16	18	37	11	50	39	126
Sub total		11 846	25 762	2 056	6 586	50 413	108 252	1 240	4 572
TOTAL		37 608		8 624		158 665		5 812	
		46 232				164 477			

Appendix 12

Structured questionnaire for pilot study (with descriptive analysis; standard deviation (SD), means and corrected item in total correlation)

Item no	Item	SD	Means	Corrected item (total correlation)
1	Individu yang pintar cerdas mempunyai satu atau lebih kebolehan luar biasa *Gifted individuals has one or more exceptional abilities*	0.891	4.254	0.337
2	Individu yang pintar cerdas mempunyai tahap IQ yang lebih daripada 140 *Gifted individuals have IQ test scores more than 140*	1.651	3.035	0.321
3	Prodigy adalah pintar cerdas yang khusus *Prodigy is a more refined type of giftedness*	1.616	2.386	0.318
4	Individu yang pintar cerdas mempunyai pencapaian akademik yang luar biasa *Gifted individuals have exceptional academic achievement*	0.818	4.254	0.416
5	Individu yang pintar cerdas mempunyai tingkah laku yang amat berbeza daripada yang biasa *Gifted individuals exhibit peculiar behaviours*	1.091	3.632	0.428
6	Individu yang pintar cerdas adalah seimbang dari segi kognitif, emosi dan sosial *Gifted individuals are cognitively, emotionally and socially well-balanced*	1.191	3.447	0.268
7	Individu yang pintar cerdas mempunyai motivasi yang tinggi *Gifted individuals are highly motivated*	0.789	4.079	0.292
8	Individu yand pintar cerdas dan individu yang berbakat boleh dianggap mempunyai ciri – ciri yang sama *Gifted individuals and talented individuals are similar in their characteristics*	1.058	3.149	0.338
9	Pintar cerdas ialah label yang diberikan oleh pakar seperti guru kepada pelajar yang mempunyai kebolehan luar biasa *Giftedness is a label given by a group of experts such as teachers to label students with exceptional ability*	1.16	3.737	0.377
10	Pengenalpastian pelajar pintar cerdas yang dilakukan oleh pakar seperti guru boleh dipercayai dan sah *Experts identification of gifted students such as by teachers are highly reliable and valid*	1.189	3.412	0.529
11	Individu yang pintar cerdas berkemungkinan	1.123	2.728	0.221

	merupakan pelajar yang rendah pencapaian akademik *Gifted individuals could be academic underachievers*			
12	Taraf sosio ekonomi keluarga dapat meramalkan pencapaian individu pintar cerdas pada peringkat dewasa *Familial social economic status (SES) predicts adulthood achievement of gifted individuals*	1.293	2.974	0.346
13	Pelajar yang pintar cerdas gemar dilabel sebagai pintar cerdas Gifted students like to be labelled as gifted	1.413	3.053	0.397
14	Melabel adalah perlu untuk mengenal pasti pelajar yang pintar cerdas *Labelling is essential in identifying gifted students*	1.144	3.351	0.398
15	Pakar dalam pendidikan pintar cerdas merujuk kepada individu yang mempunyai sumbangan cemerlang dalam bidang pendidikan pintar cerdas *Experts in gifted education refers to individuals with distinct contribution in gifted education field*	1.345	3.535	0.611
16	Tiada batasan umur dalam mengenal pasti individu yang pintar cerdas *There is no age limit to identify gifted individuals*	0.87	4.114	0.32
17	Individu yang pintar cerdas juga dapat dikenal pasti pada peringkat dewasa *Gifted individuals still can be identified during adulthood*	1.087	3.781	0.462
18	Pelajar yang pintar cerdas mendapat manfaat daripada perhatian media *Gifted students benefit from media attention*	1.243	3.491	0.441
19	Kepintaran dan bakat adalah anugerah Tuhan *Gifts and talents are given by God*	0.873	4.561	0.19
20	Kepintaran adalah turun-temurun *Giftedness is hereditary*	0.954	2.974	0.38
21	Kepintaran adalah semula jadi manakala bakat adalah dipupuk *Gifts are innate while talents are developed*	1.189	3.579	0.28
22	Kepintaran dalam matematik atau sains lebih disukai berbanding dengan bakat dalam kesenian *Giftedness in mathematics or science is preferable than giftedness in arts*	1.132	3.105	0.296
23	Pelajar yang pintar cerdas mempunyai ibu bapa	1.019	2.93	0.246

	yang pintar cerdas juga *Gifted students tend to have equally bright parents*			
24	Pengertian konsep pintar cerdas adalah berdasarkan faktor konteks sosial seperti kepercayaan agama dan nilai moral *Giftedness is defined based on social-contextual factors such as religious belief and moral values*	1.362	3.193	0.406
25	Latar belakang pendidikan ibu bapa mempunyai hubungan dengan kemahiran intelektual pelajar yang pintar cerdas *Parental education background is correlated with intellectual skills of gifted students*	0.868	3.842	0.287
26	Gaya keibubapaan ada hubungan dengan perkembangan dan pencapaian pelajar yang pintar cerdas dalam jangka masa panjang *Parenting style is linked with the development and/or achievement of gifted students in a long term run*	1.074	3.877	0.353
27	Pelajar yang pintar cerdas tidak wajar menerima perhatian yang keterlaluan daripada media *Gifted students should not receive overzealous media attention*	1.022	4.018	0.27
28	Guru–guru mungkin mempunyai nilai berkaitan dengan pendidikan yang berbeza daripada ibu bapa pelajar yang pintar cerdas *Teachers might have different education-related values from the parents of gifted students*	1.339	3.509	0.54
29	Keintelektualan pelajar yang pintar cerdas adalah hasil daripada kombinasi anyara pintar cerdas dan kerja keras *Intellectual eminence of gifted students resulted from the combination of gifts and hard work*	1.189	3.746	0.585
30	Kebolehan yang lebih tinggi daripada tahap purata adalah antara ciri-ciri pintar cerdas *Above average ability is one of the characteristics of giftedness*	1.341	3.605	0.478
31	Individu yang pintar cerdas adalah kreatif *Gifted individuals are creative*	1.107	3.632	0.289
32	Individu yang pintar cerdas komited terhadap tugasan *Gifted individuals are task committed*	1.182	3.86	0.355
33	Individu yang pintar cerdas bersifat analitis *Gifted individuals are analytical*	1.409	3.447	0.463
34	Individu yang pintar cerdas berfikiran kritis *Gifted individuals are critical*	1.013	4.018	0.35

35	Individu yang pintar cerdas adalah praktikal *Gifted individuals are practical*	1.169	3.632	0.331
36	Menjadi pintar cerdas bermaksud bakat yang dimiliki oleh individu yang pintar cerdas diiktiraf, diterima dan dihargai oleh masyarakat setempat individu yang pintar cerdas itu. *Being gifted means the gifts or talents possess by a gifted individual is recognised, accepted and valued by society and culture where he or she belongs*	1.243	3.509	0.451
37	Individu yang pintar cerdas mestilah mampu menunjukkan kebolehan mereka *Gifted individuals must be able to demonstrate their abilities*	0.793	4.132	0.358
38	Individu yang pintar cerdas mempunyai kebolehan yang terserlah *Gifted individuals have excellent abilities*	0.738	4.219	0.313
39	Individu yang pintar cerdas adalah cemerlang dalam kepintaran yang berbeza seperti kepintaran tentang kesedaran ruang atau kepintaran dalam kemahiran hubungan interpersonal *Gifted individuals are excellent in a different domain of intelligence such as spatial intelligence or interpersonal intelligence*	1.091	3.939	0.535
40	Individu pintar cerdas dikurniai dengan kebolehan semula jadi *Gifted individuals are endowed with innate untrained abilities*	1.175	3.904	0.315
41	Individu yang berbakat mempunyai penguasaan yang cemerlang dalam kebolehan yang dipupuk secara sistematik *Talented individuals have outstanding mastery of systematically developed abilities*	0.82	4.096	0.432
42	Individu yang pintar cerdas mempunyai kadar kelajuan yang luar biasa dalam memproses maklumat Gifted individuals have extraordinary speed of information processing	0.988	4.123	0.328
43	Individu yang pintar cerdas mempunyai sikap yang teguh dalam menyiapkan tugasan dengan cepat dan mengikut waktu yang ditetapkan *Gifted individuals have strong attitude of speed and completion time of a task*	1.199	3.798	0.444
44	Individu yang pintar cerdas mempunyai strategi yang stabil dalam menyiapkan tugasan *Gifted individuals have stable strategic processing in completing a task*	0.986	3.965	0.46
45	Individu yang pintar cerdas mempunyai	1.181	3.746	0.359

	kebolehan cemerlang yang seimbang dalam kemahiran verbal/ lisan dan matematik *Gifted individuals have balance superiority in verbal and mathematics efficacy*			
46	Individu yang pintar cerdas merupakan pelajar yang berkebolehan mengawal pembelajaran mereka sendiri *Gifted students are self-regulated learners*	0.819	3.965	0.32
47	Pelajar yang pintar cerdas memiliki kebolehan tentang ruang cenderung memilih pengkhususan pengajian dalam bidang kejuruteraan atau sains komputer di universiti *Gifted students with spatial ability tend to choose majoring such as engineering or computer science in university*	1.396	3.342	0.489
48	Pelajar yang pintar cerdas yang memiliki kebolehan dalam kemahiran berkomunikasi lebih cenderung untuk memilih pengkhususan pengajian dalam bidang seperti sejarah atau sastera *Gifted students with verbal ability tend to major in fields like history or arts*	1.396	3.123	0.43
49	Individu yang pintar cerdas mempunyai daya ingatan yang sangat kuat *Gifted individuals have excellent memory*	0.877	4.211	0.377
50	Individu yang pintar cerdas mempunyai persepsi/tanggapan yang tinggi terhadap keupayaan akademik mereka *Gifted students have high perceptions of their own academic competency*	0.885	4.149	0.359
51	Individu yang pintar cerdas mempunyai nilai moral dan etika yang tinggi *Gifted individuals has high moral and/or ethical values*	1.122	3.202	0.358
52	Lelaki yang pintar cerdas lebih terserlah dalam bidang matematik dan sains manakala perempuan yang pintar cerdas lebih terserlah dalam bidang sastera *Gifted males are predominant in mathematics and science while gifted females are predominant in arts*	1.254	3.14	0.421
53	Individu yang pintar cerdas adalah tekun dalam menyiapkan tugasan *Gifted individuals are persevered in task completion*	1.217	3.596	0.284
54	Individu yang pintar cerdas bersifat optimistic *Gifted individuals are optimistic*	1.386	3.325	0.358
55	Individu yang pintar cerdas adalah produktif	1.135	3.781	0.451

	Gifted individuals are productive			
56	Pelajar yang pintar cerdas mempunyai motivasi akademik yang mantap *Gifted students have superior academic motivation*	1.096	3.86	0.355
57	Individu yang pintar cerdas mempunyai tahap keyakinan yang tinggi Gifted individuals have high self-confidence	0.835	4.105	0.341
58	Individu yang pintar cerdas adalah perfektionis *Gifted individuals are perfectionist*	1.539	2.886	0.469
59	Lelaki dan perempuan yang pintar cerdas secara relatifnya mempunyai persepsi kendiri terhadap diri yang sama *Gifted males and females relatively similar in their self-perception*	1.394	2.886	0.422
60	Pelajar yang pintar cerdas mempunyai kebolehan dalam menyeimbangkan kemahiran yang ada dengan tugasan yang diberikan *Gifted students have the ability to balance between skills and tasks given*	1.179	3.614	0.368
61	Personaliti dapat meramal pencapaian pelajar pintar cerdas pada peringkat dewasa *Personality can predict adulthood achievement of gifted students*	1.288	3.333	0.429
62	Perkembangan mental atau kematangan yang cepat ketika kanak–kanak dapat meramalkan kebolehan seseorang berada pada tahap yang lebih tinggi daripada tahap biasa *Precociousness at early age does predict above average ability*	1.117	3.675	0.511
63	Individu yang pintar cerdas mempunyai pengaktifan otak yang tinggi berbanding dengan individu bukan pintar cerdas *Gifted individuals has higher brain activation as compared to non gifted individuals*	1.06	3.991	0.436
64	Pelajar yang pintar cerdas mempunyai saiz otak yang lebih besar *Gifted students have bigger brains*	1.226	2.412	0.285
65	Pelajar yang pintar cerdas mempunyai otak yang lebih berat *Gifted students have heavier brains*	1.218	2.254	0.337
66	Sikap tahu-semua-benda dianggap salah satu sikap pelajar yang pintar cerdas *The know-it-all attitude is perceived as one of the attitudes of gifted students*	1.144	3.579	0.512
67	Pelajar yang pintar cerdas cepat merasa bosan *Gifted students are easily bored*	1.382	3.018	0.261

68	Pelajar yang pintar cerdas dapat mewujudakan stimulasi intelektual dan fizikal sendiri *Gifted students are able to create their own intellectual and/or physical stimulation*	1.397	3.509	0.469
69	Individu yang pintar cerdas merupakan individu yang berorientasikan matlamat *Gifted individuals are goal oriented*	1.013	3.965	0.473
70	Mudahnya terdedah atau terpengaruh kepada sesuatu merupakan salah satu ciri pelajar yang pintar cerdas *Vulnerability is one of the characteristics of gifted students*	1.413	3.114	0.496
71	Invididu yang pintar cerdas adalah tekun dalam menyiapkan tugasan *Gifted individuals are persevered in task completion*	1.217	3.596	0.284
72	Individu yang pintar cerdas adalah cermat dan berwaspada *Gifted individuals are conscientious*	1.277	3.477	0.304
73	Individu yang pintar cerdas adalah ceria *Gifted individuals are cheerful*	1.258	3.026	0.39
74	Individu yang pintar cerdas menggunakan strategi perbandingan sosial dalam meningkatkan efikasi/keyakinan kendiri apabila mereka merasakan prestasi/pencapaian akademik mereka rendah/lemah *Gifted individuals use social comparison strategies to enhance self-efficacy when they thought that they have performed poorly academically*	1.35	3.43	0.448
75	Penyesuaian sosial adalah salah satu ciri penting dalam menentukan pencapaian pada peringkat dewasa bagi individu yang pintar cerdas *Social adjustability is one of the characteristics essential in ensuring later achievement in adulthood for gifted individuals*	1.325	3.526	0.614
76	Ujian IQ dan ujian pengukuran yang lain boleh digunakan untuk meramal pencapaian pelajar yang pintar cerdas pada peringkat dewasa *IQ test and other assessments can be used to predict adulthood achievement of gifted students*	0.996	4.00	0.479
77	Pengukuran yang pelbagai merupakan peramal yang lebih baik dalam pencapaian pada peringkat dewasa berbanding dengan penggunnaan satu pengukuran sahaja *Multiple assessments serve as better predictor or adult achievement of gifted students as*	1.438	3.579	0.571

	compared to one type of assessment			
78	Pelajar yang pintar cerdas boleh diklasifikasikan sebagai biasa, sederhana, dan amat pintar cerdas *Gifted students can be classified as mildly, moderately and highly gifted*	1.376	3.263	0.359
79	Pengukuran pada peringkat usia muda dapat memberikan maklumat tentang aspek psikologi pelajar yang pintar cerdas *Assessment at early age could provide psychological information about gifted students*	1.304	3.561	0.519
80	Pengukuran berasaskan kriteria seperti peperiksaan awam dapat mengenal pasti pelajar yang pintar cerdas *Criterion-performance based assessments such as National Examination can identify gifted students*	1.42	3.14	0.544
81	Ujian IQ adalah peramal yang lebih baik dalam mengenal pasti pelajar yang pintar cerdas *IQ tests are better predictor in identifying gifted students*	1.026	3.974	0.503
84	Perhatian media membantu dalam mengenal pasti pelajar yang pintar cerdas *Media attention helps in identifying gifted children*	1.115	3.491	0.496
87	Usaha dan latihan yang khusus untuk pelajar yang pintar cerdas membantu dalam meningkatkan bakat mereka *Deliberate efforts and/or training for gifted students help to sustain and enhance their gifts*	0.944	4.044	0.526
88	Hasil intervensi pendidikan mungkin berbeza antara pelajar yang pintar cerdas *The result of educational interventions may vary for different gifted students*	1.259	3.719	0.499
89	Mentor mempunyai kesan yang signifikan atau penting terhadap remaja yang pintar cerdas *Mentorship has positive significant impact on gifted adolescents*	1.188	3.781	0.412
90	Pelajar yang pintar cerdas mempunyai kesukaran dalam memilih kerjaya *Gifted students have difficulties in choosing career*	1.286	2.956	0.398
96	Program pengayaan adalah lebih baik kerana pelajar tidak perlu lompat (melangkau) kelas *Enrichment programme is preferable as students do not have to skip grades*	1.394	3.289	0.502
95	Program ekspres memberikan manfaat yang berbeza kepada pelajar yang pintar cerdas yang berlainan kepintaran	1.314	3.719	0.626

	Acceleration programme gives mixed benefits to various gifted students			
97	Individu yang pintar cerdas dapat menyerlah dan sampai tahap cemerlang melalui latihan dan rangsangan persekitaran yang terbatas *Gifted individuals can flourished and reached the level of eminence with limited training and/or environmental stimulation*	1.305	3.535	0.545
98	Kurikulum yang fleksibel patut dilaksanakan untuk memenuhi keperluan pelajar yang pintar cerdas *Flexible curriculum should be implemented to suit with the needs of gifted students*	1.149	4.088	0.525

Appendix 13

Structured questionnaire for main study (with related references)

No.	Item	References
1	Gifted individuals and talented individuals are similar in their characteristics	(Freeman, 2002; DfCSF, 2008)
2	Giftedness is a label given by a group of experts such as teachers to label students with exceptional ability	(Clark and Zimmerman, 1984; Pfeiffer, 2003)
3	Gifted students can be classified as mildly, moderately and highly gifted	(Keating and Stanley, 1972; Swiatek and Benbow, 1991; Milgram and Hong, 1994; Gagné, 1998)
4	Being gifted means the gifts or talents possess by a gifted individual is recognised, accepted and valued by society and culture where he or she belongs	(Larsson, 1986; Howe, 1990; Schuster, 1990; Dai et al., 1998; Miller, 2005; Wu, 2005; Worrell, 2009)
5	Experts in gifted education refers to individuals with distinct contribution in gifted education field	(Pfeiffer, 2003)
6	Labelling is essential in identifying gifted students	(Colangelo and Fleuridas, 1986; Colangelo and Brower, 1987; Berlin, 2009)
7	Giftedness is hereditary	(Galton, 1869; Vernon, 1992)
8	Gifted students tend to have equally bright parents	(Barbe, 1956; Williams, 1975; Guttman and Shoham, 1983)
9	Gifted males are predominant in mathematics and science while gifted females are predominant in arts	(Benbow, 1988; Benbow and Arjmand, 1990; Dark and Benbow, 1991; Mills et al., 1993)
10	Gifted individuals have IQ test scores more than 140	(Herring, 1926; Lehman and Witty, 1927; Sternberg et al., 1981; Mangels et al., 2006)
11	Gifted individuals are cognitively, emotionally and socially well-balanced	(Achter et al., 1996; Hegarty, 2007)
12	Gifted individuals could be academic underachievers	(Reis and McCoach, 2000; McCoach and Siegle, 2003)
13	Familial social economic status (SES) predicts adulthood achievement of gifted individuals	(Simonton, 1976; Guttman and Shoham, 1983; Borland et al., 2000)
14	Gifts and talents are given by God	(Śefer, 2007; Ziegler and Stoeger, 2007)
15	Gifts are innate while talents are developed	(Gagné, 2004; Gagné, 2007)
16	Giftedness is defined based on social-contextual factors such as religious belief and moral values	(Larsson, 1986; Wu et al., 2000; Ngara and Porath, 2004; Miller, 2005; Ngara, 2006; Śefer, 2007; Ngara, 2008; Lara, 2009)
17	Gifted students have difficulties in choosing career	(Getzels and Jackson,

		1960; Perrone, 1986; Yoo and Moon, 2006)
18	Gifted individuals have balance superiority in verbal and mathematics efficacy	(Zimmerman and Martinez-Pons, 1990; Webb et al., 2002; Webb et al., 2007)
19	Gifted individuals must be able to demonstrate their abilities	(Tannenbaum, 1983; Haensly et al., 1986; Sternberg and Zhang, 1995)
20	Gifted individuals have excellent abilities	(Burt, 1975; Renzulli, 1978; Sternberg and Zhang, 1995)
21	Gifted individuals has one or more exceptional abilities	(Gardner, 1983; Gardner, 1987; Gardner, 1993; Gardner, 1998; Winner, 2000a; Winner and Martino, 2000)
22	Above average ability is one of the characteristics of giftedness	(Renzulli, 1978)
23	Gifted individuals are creative	(Holland, 1961; Renzulli, 1978; Treffinger, 1986; Treffinger and Renzulli, 1986; Treffinger and Saksen, 2005; Treffinger, 2009)
24	Gifted individuals are endowed with innate untrained abilities	(Galton, 1869)
25	Talented individuals have outstanding mastery of systematically developed abilities	(Gagné, 2004; 2007)
26	Gifted individuals have extraordinary speed of information processing	(Cohn et al., 1985; Span and Overtoom-Corsmit, 1986; Jackson et al., 1988; Jensen et al., 1989; Jensen, 1990; Saccuzzo et al., 1994; Kail, 2000)
27	Gifted individuals have excellent memory	(Luria, 1968; Geary and Brown, 1991; Biederman et al., 1992; Coyle et al., 1998; Ruthsatz and Detterman, 2003; Cooper et al., 2004; Amidzic et al., 2006)
28	Gifted students have the ability to balance between skills and tasks given	(Tomlinson-Keasey and Little, 1990)
29	Gifted individuals are analytical	(Sternberg, 1985; Sternberg, 1988)
30	Gifted individuals are critical	(Sternberg, 1985a; Sternberg, 1988)
31	Gifted individuals are practical	(Sternberg, 1985a; Sternberg, 1988)
32	Gifted students have high perceptions of their own academic competency	(Hoge and Renzulli, 1993; Yan and Haihui, 2005)
33	Gifted students have superior academic motivation	(Dai et al., 1998; Piirto, 2002; Speirs Neumeister, 2004b)
34	Gifted individuals have high self-confidence	(Speirs Neumeister and Finch, 2006; Colvin,

		2008)
35	Gifted individuals are perfectionist	(Hewitt and Flett, 1991; Pyryt, 1994; Parker and Adkins, 1995; Schuler, 2000; Parker et al., 2001; Speirs Neumeister, 2004b; Speirs Neumeister, 2004a; Hoekman et al., 2005; Kornblum and Ainley, 2005; Speirs Neumeister and Finch, 2006; Maksić and Iwasaki, 2009)
36	Precociousness at early age does predict above average ability	(Montour, 1977; Benbow et al., 1983; Jackson et al., 1988; Mills and Jackson, 1990; Richardson and Benbow, 1990; Robinson et al., 1996)
37	Vulnerability is one of the characteristics of gifted students	(DeLisle, 1986; Schneider et al., 1989; Cross et al., 2002; Bain and Bell, 2004)
38	Gifted individuals exhibit peculiar behaviours	(Eisenstadt, 1978; Selby et al., 2005; Peterson and Ray, 2006a; Peterson and Ray, 2006b; Peterson, 2009)
39	Gifted individuals are persevered in task completion	(Renzulli, 1978; Haensly et al., 1986)
40	Gifted individuals use social comparison strategies to enhance self-efficacy when they thought that they have performed poorly academically	(Gibbons et al., 1994)
41	Social adjustability is one of the characteristics essential in ensuring later achievement in adulthood for gifted individuals	(Koro-Ljungberg, 2002)
42	Gifted individuals has higher brain activation as compared to non-gifted individuals	(Diamond et al., 1985; Witelson et al., 1999; Heilman et al., 2003; O'Boyle, 2005; O'Boyle et al., 2005; O'Boyle, 2008)
43	Gifted students have bigger brains	(Witelson et al., 2006)
44	Gifted students have heavier brains	(Witelson et al., 1999)
45	Experts identification of gifted students such as by teachers are highly reliable and valid	(Hunsaker et al., 1997; Siegle and Powell, 2004; Siegle et al., 2010)
46	There is no age limit to identify gifted individuals	(Winner, 2000a; Winner, 2000b; Wai et al., 2005)
47	Assessment at early age could provide psychological information about gifted students	(Lubinski and Humphreys, 1992; Lubinski et al., 1995; Lubinski et al., 1996)
48	Criterion-performance based assessments such as National Examination can identify gifted students	(Jeltova and Grigorenko, 2005)
49	IQ tests are better predictor in identifying gifted students	(Flynn, 1984; Flynn, 1987; Friedman et al.,

		1995; Kanaya et al., 2003)
50	Media attention helps in identifying gifted children	(Weiner, 1953; Montour, 1977)
51	Deliberate efforts and/or training for gifted students help to sustain and enhance their gifts	(Simonton, 1991; Ericsson et al., 1993; Ericsson and Charness, 1994; Roznowski and Hong, 2000; Ward et al., 2007; Ford et al., 2009)
52	The result of educational interventions may vary for different gifted students	(DeLisle, 1986; Schneider et al., 1989)
53	Enrichment programme is preferable as students do not have to skip grades	(Kirschenbaum, 1987; White and Renzulli, 1987; Cornell, 1990; Cornell et al., 1990)
54	Acceleration programme gives mixed benefits to various gifted students	(Horne and Dupoy, 1981; Richardson and Benbow, 1990; Swiatek and Benbow, 1991; Swiatek, 1993; Gross, 2006)
55	Gifted individuals can flourish and reach the level of eminence with limited training and/or environmental stimulation	(Raskin, 1936; Simonton, 1976; Ferriman et al., 2009; Subotnik and Rickoff, 2010)
56	Flexible curriculum should be implemented to suit with the needs of gifted students	(Gentry and Owen, 1999; Johnsen et al., 2002; Gentry, 2009)
57	Parental education background is correlated with intellectual skills of gifted students	(Barbe, 1956; Roznowski and Hong, 2000; Nettle, 2003)
58	Parenting style is linked with the development and/or achievement of gifted students in a long term run	(Getzels and Jackson, 1961; Borland et al., 2000)
59	Teachers might have different education-related values from the parents of gifted students	(Woolfolk and Hoy, 1990; Evans et al., 2000; Graffam, 2006)
60	Mentorship has positive significant impact on gifted adolescents	(Kaufman et al., 1986; Clasen and Hanson, 1987; Pleiss and Feldhusen, 1995; Feldhusen, 1996; Schatz, 1999/2000; Hébert and Neumeister, 2000; Hébert and Olenchak, 2000; Freeman, 2001; Hennissen et al., 2008; Grassinger et al., 2010)

Appendix 14

Structured questionnaire (Survey) for pre service teachers[178]

All the instructions in this questionnaire have been written in italics to help you distinguish them from the questions. When going through the questionnaire, please put a tick in the box corresponding to your answer, like this ☑. Sometimes you are asked to write the answer in the space provided.

SECTION 1: Personal and general information

Gender: ☐ (1) Male ☐ (2) Female

Age:
☐ (1) 19-20 ☐ (2) 21-22
☐ (3) 23-24 ☐ (4) 25 and over

Race:
☐ (1) Malay ☐ (2) Chinese
☐ (3) Indian ☐ (4) Others (please specify):_____

Which is the following can best describe your education level:

☐ (1) SPM
☐ (2) STPM
☐ (3) College Diploma/Matriculation/A-Level
☐ (4) Bachelor (First Degree – if Education is not your first degree)
☐ (5) Others (please specify) : _____

Please tick any type of secondary school in which you have attended previously:

☐ (1) Normal school ☐ (2) Smart school
☐ (3) Vocational school ☐ (4) Boarding school (e.g. MRSM)
☐ (5) Others (please specify):_____

Please tick your Status as a:
☐ (1) Full time student ☐ (2) Part time student

Please state your programme that you are undertaking (e.g. Bachelor in Education (Math and Science, KPLI) _____

Year of your study:
☐ (1) First year
☐ (2) Second year
☐ (3) Third year
☐ (4) Final year

Have you taken any subject with a topic on giftedness?
☐ Yes ☐ No

If yes, what is (are) the subject/s that you have taken?
1) _____
2) _____

[178] The difference between the survey for pre service and in service teachers is the section 1 (personal and general information). Section 2 and 3 are the same in both sets of questionnaires.

Where do you get the information about gifted and talented students/ individuals? Please tick where appropriate (you can tick as much as you like and there is no limit to your answer)

- ☐ Media such as newspapers, TV and radio programme, websites
- ☐ Books
- ☐ Academic Journals (e.g. Journal of Educational Psychology)
- ☐ Friends who have gifted children
- ☐ Newsletters of organisations
- ☐ Formal training such as University Courses
- ☐ Workshops or seminars
- ☐ Others: (Please specify) _____

Appendix 15

Structured questionnaire (Survey) for in service teachers

All the instructions in this questionnaire have been written in italics to help you distinguish them from the questions. When going through the questionnaire, please put a tick in the box corresponding to your answer, like this ☑. Sometimes you are asked to write the answer in the space provided.

SECTION 1: Personal and general information

Gender: ☐ (1) Male ☐ (2) Female

Age: ☐ (1) 21-25 ☐ (2) 26-30 ☐ (3) 31-35
☐ (4) 36-40 ☐ (5) 41-50 ☐ (6) Over 50

Race:

☐ (1) Malay ☐ (2) Chinese
☐ (3) Indian ☐ (4) Others (please specify):_____

Which is the following can best describe your education level:

☐ (1) SPM
☐ (2) STPM
☐ (3) College Diploma/Matriculation/A-Level
☐ (4) Bachelor (First Degree)
☐ (5) Others (please specify) : _____

Please tick your Status as a:

☐ (1) Full time teacher (*please proceed to question no. 8*)
☐ (2) Trainee teacher (*please answer question no. 6*)
☐ (3) Part time/substitute teacher (*please answer question no. 7*)

If you are a trainee teacher (guru pelatih), please state the programme that you are undertaking (e.g. Bachelor in Education (Math and Science)

_____

If you are a part time or substitute teacher (guru sementara atau guru ganti*),* please state the programme that you have taken (e.g. Bachelor in Human Sciences (Psychology)

_____

Have you taken any subject with a topic on giftedness?

☐ Yes ☐ No

If yes, what is (are) the subject/s that you have taken?
1) _____
2) _____

Where do you get the information about gifted and talented students/ individuals? Please tick where appropriate (you can tick as much as you like and there is no limit to your answer)
☐ Media such as newspapers, TV and radio programme, websites

- ☐ Books
- ☐ Academic Journals (e.g. Journal of Educational Psychology)
- ☐ Friends who have gifted children
- ☐ Newsletters of organisations
- ☐ Formal training such as University Courses
- ☐ Workshops or seminars
- ☐ Others: (Please specify) _____

SECTION 2: Conceptions of gifted and talented

***Instruction**: Please choose **only one (1)** answer by ticking (V) on the given column for each item.*
***Arahan**: Sila pilih **hanya satu (1)** jawapan dengan menanda (V) pada ruang yang diberikan bagi setiap soalan.*

Bahasa Melayu	***English***	**Skala (*Rate)***
Sangat setuju	*Strongly Agree (SA)*	5
Setuju	*Agree(A)*	4
Tidak pasti	*Not sure (NS)*	3
Tidak setuju	*Disagree (DA)*	2
Sangat tidak setuju	*Strongly disagree (SDA)*	1

No.	Item	5 SA	4 A	3 NS	2 DA	1 SDA
1	Individu yang pintar cerdas dan individu yang berbakat boleh dianggap mempunyai ciri – ciri yang sama *Gifted individuals and talented individuals are similar in their characteristics*	5	4	3	2	1
2	Pintar cerdas ialah label yang diberikan oleh pakar seperti guru kepada pelajar yang mempunyai kebolehan luar biasa *Giftedness is a label given by a group of experts such as teachers to label students with exceptional ability*	5	4	3	2	1
3	Pelajar yang pintar cerdas boleh diklasifikasikan sebagai biasa, sederhana, dan amat pintar cerdas *Gifted students can be classified as mildly, moderately and highly gifted*	5	4	3	2	1
4	Menjadi pintar cerdas bermaksud bakat yang dimiliki oleh individu yang pintar cerdas diiktiraf, diterima dan dihargai oleh masyarakat setempat individu yang pintar cerdas itu. *Being gifted means the gifts or talents possess by a gifted individual is recognised, accepted and valued by society and culture where he or she belongs*	5	4	3	2	1
5	Pakar dalam pendidikan pintar cerdas merujuk kepada individu yang mempunyai sumbangan cemerlang dalam bidang pendidikan pintar cerdas *Experts in gifted education refers to individuals with distinct contribution in gifted education field*	5	4	3	2	1
6	Melabel adalah perlu untuk mengenal pasti pelajar yang pintar cerdas *Labelling is essential in identifying gifted*	5	4	3	2	1

	students					
7	Kepintaran adalah turun-temurun *Giftedness is hereditary*	5	4	3	2	1
8	Pelajar yang pintar cerdas mempunyai ibu bapa yang pintar cerdas juga *Gifted students tend to have equally bright parents*	5	4	3	2	1
9	Lelaki yang pintar cerdas lebih terserlah dalam bidang matematik dan sains manakala perempuan yang pintar cerdas lebih terserlah dalam bidang sastera *Gifted males are predominant in mathematics and science while gifted females are predominant in arts*	5	4	3	2	1
10	Individu yang pintar cerdas mempunyai tahap IQ yang lebih daripada 140 *Gifted individuals have IQ test scores more than 140*	5	4	3	2	1
11	Individu yang pintar cerdas adalah seimbang dari segi kognitif, emosi dan sosial *Gifted individuals are cognitively, emotionally and socially well-balanced*	5	4	3	2	1
12	Individu yang pintar cerdas berkemungkinan merupakan pelajar yang rendah pencapaian akademik *Gifted individuals could be academic underachievers*	5	4	3	2	1
13	Taraf sosio ekonomi keluarga dapat meramalkan pencapaian individu pintar cerdas pada peringkat dewasa *Familial social economic status (SES) predicts adulthood achievement of gifted individuals*	5	4	3	2	1
14	Kepintaran dan bakat adalah anugerah Tuhan *Gifts and talents are given by God*	5	4	3	2	1
15	Kepintaran adalah semula jadi manakala bakat adalah dipupuk *Gifts are innate while talents are developed*	5	4	3	2	1
16	Pengertian konsep pintar cerdas adalah berdasarkan faktor konteks sosial seperti kepercayaan agama dan nilai moral *Giftedness is defined based on social-contextual factors such as religious belief and moral values*	5	4	3	2	1
17	Pelajar yang pintar cerdas mempunyai kesukaran dalam memilih kerjaya *Gifted students have difficulties in choosing*	5	4	3	2	1

	career					
18	Individu yang pintar cerdas mempunyai kebolehan cemerlang yang seimbang dalam kemahiran verbal/ lisan dan matematik *Gifted individuals have balance superiority in verbal and mathematics efficacy*	5	4	3	2	1
19	Individu yang pintar cerdas mestilah mampu menunjukkan kebolehan mereka *Gifted individuals must be able to demonstrate their abilities*	5	4	3	2	1
20	Individu yang pintar cerdas mempunyai kebolehan yang terserlah *Gifted individuals have excellent abilities*	5	4	3	2	1
21	Individu yang pintar cerdas mempunyai satu atau lebih kebolehan luar biasa *Gifted individuals has one or more exceptional abilities*	5	4	3	2	1
22	Kebolehan yang lebih tinggi daripada tahap purata adalah antara ciri-ciri pintar cerdas *Above average ability is one of the characteristics of giftedness*	5	4	3	2	1
23	Individu yang pintar cerdas adalah kreatif *Gifted individuals are creative*	5	4	3	2	1
24	Individu pintar cerdas dikurniai dengan kebolehan semula jadi *Gifted individuals are endowed with innate untrained abilities*	5	4	3	2	1
25	Individu yang berbakat mempunyai penguasaan yang cemerlang dalam kebolehan yang dipupuk secara sistematik *Talented individuals have outstanding mastery of systematically developed abilities*	5	4	3	2	1
26	Individu yang pintar cerdas mempunyai kadar kelajuan yang luar biasa dalam memproses maklumat Gifted individuals have extraordinary speed of information processing	5	4	3	2	1
27	Individu yang pintar cerdas mempunyai daya ingatan yang sangat kuat *Gifted individuals have excellent memory*	5	4	3	2	1
28	Pelajar yang pintar cerdas mempunyai kebolehan dalam menyeimbangkan kemahiran yang ada dengan tugasan yang diberikan *Gifted students have the ability to balance between skills and tasks given*	5	4	3	2	1

29	Individu yang pintar cerdas bersifat analitis *Gifted individuals are analytical*	5	4	3	2	1
30	Individu yang pintar cerdas berfikiran kritis Gifted individuals are critical	5	4	3	2	1
31	Individu yang pintar cerdas adalah praktikal Gifted individuals are practical	5	4	3	2	1
32	Individu yang pintar cerdas mempunyai persepsi/tanggapan yang tinggi terhadap keupayaan akademik mereka *Gifted students have high perceptions of their own academic competency*	5	4	3	2	1
33	Pelajar yang pintar cerdas mempunyai motivasi akademik yang mantap *Gifted students have superior academic motivation*	5	4	3	2	1
34	Individu yang pintar cerdas mempunyai tahap keyakinan yang tinggi Gifted individuals have high self-confidence	5	4	3	2	1
35	Individu yang pintar cerdas adalah perfektionis *Gifted individuals are perfectionist*	5	4	3	2	1
36	Perkembangan mental atau kematangan yang cepat ketika kanak–kanak dapat meramalkan kebolehan seseorang berada pada tahap yang lebih tinggi daripada tahap biasa *Precociousness at early age does predict above average ability*	5	4	3	2	1
37	Mudahnya terdedah atau terpengaruh kepada sesuatu merupakan salah satu ciri pelajar yang pintar cerdas *Vulnerability is one of the characteristics of gifted students*	5	4	3	2	1
38	Individu yang pintar cerdas mempunyai tingkah laku yang amat berbeza daripada yang biasa *Gifted individuals exhibit peculiar behaviours*	5	4	3	2	1
39	Individu yang pintar cerdas adalah tekun dalam menyiapkan tugasan *Gifted individuals are persevered in task completion*	5	4	3	2	1
40	Individu yang pintar cerdas menggunakan strategi perbandingan sosial dalam meningkatkan efikasi/keyakinan kendiri apabila mereka merasakan prestasi/pencapaian akademik mereka rendah/lemah *Gifted individuals use social comparison*	5	4	3	2	1

	strategies to enhance self-efficacy when they thought that they have performed poorly academically					
41	Penyesuaian sosial adalah salah satu ciri penting dalam menentukan pencapaian pada peringkat dewasa bagi individu yang pintar cerdas *Social adjustability is one of the characteristics essential in ensuring later achievement in adulthood for gifted individuals*	5	4	3	2	1
42	Individu yang pintar cerdas mempunyai pengaktifan otak yang tinggi berbanding dengan individu bukan pintar cerdas *Gifted individuals has higher brain activation as compared to non gifted individuals*	5	4	3	2	1
43	Pelajar yang pintar cerdas mempunyai saiz otak yang lebih besar *Gifted students have bigger brains*	5	4	3	2	1
44	Pelajar yang pintar cerdas mempunyai otak yang lebih berat *Gifted students have heavier brains*	5	4	3	2	1
45	Pengenalpastian pelajar pintar cerdas yang dilakukan oleh pakar seperti guru boleh dipercayai dan sah *Experts identification of gifted students such as by teachers are highly reliable and valid*	5	4	3	2	1
46	Tiada batasan umur dalam mengenal pasti individu yang pintar cerdas *There is no age limit to identify gifted individuals*	5	4	3	2	1
47	Pengukuran pada peringkat usia muda dapat memberikan maklumat tentang aspek psikologi pelajar yang pintar cerdas *Assessment at early age could provide psychological information about gifted students*	5	4	3	2	1
48	Pengukuran berasaskan kriteria seperti peperiksaan awam dapat mengenal pasti pelajar yang pintar cerdas *Criterion-performance based assessments such as National Examination can identify gifted students*	5	4	3	2	1
49	Ujian IQ adalah peramal yang lebih baik dalam mengenal pasti pelajar yang pintar cerdas *IQ tests are better predictor in identifying gifted students*	5	4	3	2	1
50	Perhatian media membantu dalam mengenal pasti pelajar yang pintar cerdas *Media attention helps in identifying gifted*	5	4	3	2	1

	children					
51	Usaha dan latihan yang khusus untuk pelajar yang pintar cerdas membantu dalam meningkatkan bakat mereka *Deliberate efforts and training for gifted students help to sustain and enhance their gifts*	5	4	3	2	1
52	Hasil intervensi pendidikan mungkin berbeza antara pelajar yang pintar cerdas *The result of educational interventions may vary for different gifted students*	5	4	3	2	1
53	Program pengayaan adalah lebih baik daripada program ekspres kerana pelajar tidak perlu lompat (melangkau) kelas *Enrichment programme is better than acceleration programme as students do not have to skip grades*	5	4	3	2	1
54	Program ekspres memberikan manfaat yang berbeza kepada pelajar yang pintar cerdas yang berlainan kepintaran *Acceleration programme gives mixed benefits to various gifted students*	5	4	3	2	1
55	Individu yang pintar cerdas dapat menyerlah dan sampai tahap cemerlang melalui latihan dan rangsangan persekitaran yang terbatas *Gifted individuals can flourished and reached the level of eminence with limited training and/or environmental stimulation*	5	4	3	2	1
56	Kurikulum yang fleksibel patut dilaksanakan untuk memenuhi keperluan pelajar yang pintar cerdas *Flexible curriculum should be implemented to suit with the needs of gifted students*	5	4	3	2	1
57	Latar belakang pendidikan ibu bapa mempunyai hubungan dengan kemahiran intelektual pelajar yang pintar cerdas *Parental education background is correlated with intellectual skills of gifted students*	5	4	3	2	1
58	Gaya keibubapaan ada hubungan dengan perkembangan dan pencapaian pelajar yang pintar cerdas dalam jangka masa panjang *Parenting style is linked with the development and achievement of gifted students in a long term run*	5	4	3	2	1
59	Guru–guru mungkin mempunyai nilai berkaitan dengan pendidikan yang berbeza daripada ibu bapa pelajar yang pintar cerdas *Teachers might have different education-related*	5	4	3	2	1

	values from the parents of gifted students					
60	Mentor mempunyai kesan yang signifikan atau penting terhadap remaja yang pintar cerdas *Mentorship has positive significant impact on gifted adolescents*	5	4	3	2	1

SECTION 3: Contact details (for interview)

If you wish to get involved in an interview session, please leave your particulars below. I will contact you later on to set the date of the meeting.
Name: _____
Email: _____
Phone number: _____

---------- You may tear this page following this line, if you wish ----------

Please do not hesitate to contact me should you have any questions concerning the study. Thank you.

Hadijah Jaffri
Durham University
Email : hadijah.jaffri@durham.ac.uk
Handphone number: [redacted]

Appendix 16
Soalan jawapan terbuka (*Open-ended question*)

A. Tanggapan terhadap individu yang pintar cerdas dan yang berbakat
Notions of gifted and talented individuals

1. Apakah yang anda faham mengenai pintar cerdas?
   What do you understand about giftedness?

_____
_____

2. Apakah konsepsi anda mengenai individu yang pintar cerdas?
   What are your conceptions of gifted individuals?

_____
_____

3. Apakah konsepsi anda mengenai individu yang berbakat?
   What are your conceptions of talented individuals?

_____
_____

4. Pada pandangan anda, apakah ciri – ciri yang terdapat pada individu yang pintar cerdas?
   In your opinion, what are the characteristics that gifted individuals have?

_____
_____

5. Pada pandangan anda, apakah ciri – ciri yang terdapat pada individu yang berbakat?
   In your opinion, what are the characteristics that talented individuals have?

_____
_____

6. Pada pandangan anda, adakah individu yang pintar cerdas boleh dianggap sebagai individu yang berbakat dan juga sebaliknya (individu yang berbakat dianggap sebagai individu yang pinta cerdas?) Sila pilih respon anda dengan menanda (√)
   Do you think that gifted individuals also can be regarded as talented as well and vice versa (talented individuals can be regarded as gifted too)?
   Please tick (√) your response:

   ☐ Ya / *Yes* ☐ Tidak / *No* ☐ Kurang pasti / *Not sure*

   Sila huraikan jawapan anda
   Please justify your answers

_____
_____

7. Senaraikan isu yang memusykilkan anda terhadap individu yang pintar cerdas dan juga individu yang berbakat.
   Please list some of the issues that intrigue you about gifted individuals as well as talented individuals.

_____
_____

8. Senaraikan lima persoalan yang anda pernah terfikir mengenai pintar cerdas
   Please list up to five questions you have about giftedness.

1)_____
2)_____
3)_____

4)_____
5)_____

9. Dari manakah anda memperolehi informasi mengenai individu yang pintar cerdas dan berbakat?
Where do you find information about gifted and talented students/ individuals?

_____
_____

10. Pada pandangan anda, sejauh manakah latihan mengajar (seperti subjek yang ditawarkan oleh universiti anda) memadai dalam membantu anda dalam mengenalpasti pelajar yang pintar cerdas dan berbakat pada masa hadapan?
How adequately do you think your teaching training (such as subjects offered by the university you are studying) in preparing you to identify gifted and talented students in the future?

_____
_____

11. Pada pandangan anda, adakah anda yakin dalam mengenalpasti pelajar yang pintar cerdas?
Sila pilih respon anda dengan menanda √
Are you confident to identify students as gifted and talented?
Please tick (√ *) your response:*

☐ Ya / *Yes* ☐ Tidak / *No* ☐ Kurang pasti / *Not sure*
Nyatakan alasan anda:
Please state your reason:

_____
_____

12. Pada pandangan anda, adakah perlu untuk melabel pelajar sebagai pelajar yang pintar cerdas dan berbakat? Sila pilih respon anda dengan menanda √
Do you think that is it necessary to label students as gifted and talented?
Please tick (√ *) your response:*

☐ Ya/ *Yes* ☐ Tidak/ No ☐ Kurang pasti/ *Not sure*
Nyatakan alasan anda:
Please state your reason:

_____
_____

13. Adakah anda arif tentang proses pengenalpastian yang ada bagi mengenalpasti pelajar sebagai pelajar yang pintar cerdas dan berbakat?
Are you familiar with the identification process for identifying gifted and talented students?
Sila pilih respon anda dengan menanda √
Please tick (√ *) your response:*

☐ Ya/ *Yes* ☐ Tidak/ *No*

Jika Ya, apakah kriteria yang perlu diambil sebagai pengukuran dalam mengenal pasti mereka?
If yes, what is/are the criteria that should be included in the assessment for the identification process?

_____
_____

14. Sila nyatakan aspek latihan pengajaran yang ingin anda terima bagi meningkatkan pemahaman anda mengenai pintar cerdas.
Please indicate in which aspects of educational training you would like to receive in enhancing your understanding about giftedness.

_____
_____

15. Apakah yang anda anggap sebagai kriteria penting dalam membina pendekatan baru atau melaksanakan program dalam mengenalpasti pelajar yang pintar cerdas dan berbakat?
What do you consider to be important criteria in establishing a new method or programme in identifying gifted and talented students?

_____
_____

Terima kasih/*Thanks you*.

Jika anda mempunyai sebarang pertanyaan mengenai kajian ini, anda dialukan untuk berhubung dengan saya untuk maklumat lanjut. Sekian, terima kasih.
Please do not hesitate to contact me should you have any questions concerning the study. Thank you.

Hadijah Jaffri
Durham University
Email : hadijah.jaffri@durham.ac.uk
Handphone number: [redacted]

Appendix 17

Protokol temu bual (Interview protocol)

Temu bual ini berdasarkan soalan jenis terbuka. Soalan diaju untuk mendapatkan maklumat lanjut berdasarkan jawapan yang telah diberikan pada kertas soalan pra temubual. Respondent kajian dibenarkan untuk melihat kertas soalan pra temubual yang telah diisi.
(The interview questions are based on the open-ended questions. The questions are asked to get further explanation of answers provided by participants in the open-ended part. Participants are given a choice of see the answers they have written).

1. Bolehkah anda huraikan dengan lebih lanjut jawapan anda tentang ciri-ciri individu pintar cerdas yang telah anda berikan?
   Based on your answers of the characteristics of gifted individuals, could you explain further your given answers?

   _____

2. Berdasarkan jawapan anda bagi ciri-ciri individu berbakat yang telah diberikan, bolehkah anda huraikan dengan lebih lanjut jawapan anda?
   Based on your answers of the characteristics of talented individuals, could you explain further your given answers?

   _____

3. Bolehkah anda jelaskan isu dan perkara yang menarik minat atau perhatian anda tentang individu pintar cerdas dan berbakat?
   Can you explain further the issues that intrigue you about gifted and talented individuals?

   _____

4. Anda telah menyenaraikan beberapa persoalan tentang pintar cerdas. Bagaimanakah caranya anda mendapatkan jawapannya?
   You have listed several questions that you have about giftedness, so how do you plan to find the answers to those questions?

   _____

5. Seperti yang telah anda nyatakan, terdapat pelbagai sumber rujukan mengenai individu pintar cerdas dan berbakat. Pada pendapat anda, adakah anda telah mendapat maklumat yang mencukupi tentang individu pintar cerdas dan berbakat berdasarkan bacaan anda?
   As stated, you get information about gifted and talented individuals from various sources. Do you think that you get enough information about gifted and talented individuals from your reading?

   _____

6. Apakah cara lain untuk mendapatkan maklumat tentang individu pintar cerdas dan berbakat yang tidak tercatat dalam soal selidik?
   What are other possible means to get information about gifted and talented individuals that you can think of which are not listed in the questionnaire?

   _____

7. **Soalan bagi pelajar:** Berdasarkan jawapan anda tentang latihan perguruan yang sedang anda lalui, ***For pre service teacher****: Based on your answer about the adequacy of teaching training that you are undergoing, you said that it is (based on their answers such as adequate or not adequate etc.).*
   d. Apakah subjek yang anda rancang akan ambil / pernah ambil / atau sedang ambil selain subjek Pengenalan kepada Psikologi Pendidikan, untuk membantu anda dalam meningkatkan pemahaman mengenai pintar cerdas?
      What are the subjects other than the Introduction to Educational Psychology that you plan to take/ are taking/ have taken that help you to understand better about giftedness?

      _____

e. Sekiranya anda pernah mengikuti bengkel atau seminar tentang pintar cerdas:
If they have attended workshop or seminar about giftedness:

1. Apakah bengkel/ seminar yang telah anda ikuti?
What was the workshop or seminar that you have attended?

_____

2. Berapa lamakah bengkel / seminar itu diadakan?
How long was the duration of the workshop/ seminar? (in terms of hours, days etc.)

_____

3. Siapakah atau organisasi manakah yang menganjurkan bengkel/ seminar tersebut? Who was the organiser of the workshop/ seminar?
Was it organised by a local or international organisation?

_____

4. Pada pandangan anda, dari segi apakah bengkel/ seminar itu dapat membantu dalam meningkatkan pemahaman anda mengenai pintar cerdas?
In your opinion, in what way the workshop or seminar has served you in understanding giftedness better?

_____

8. **Soalan bagi guru:** Berdasarkan jawapan anda tentang latihan perguruan yang sedang anda lalui,
***For in service teachers**: Based on your answer about the adequacy of teaching training that you have gained, you said that it is (based on their answers such as adequate or not adequate etc.).*

a. Apakah subjek yang anda pernah ambil selain subjek Pengenalan kepada Psikologi Pendidikan, untuk membantu anda dalam meningkatkan pemahaman mengenai pintar cerdas?
What were the subjects other than the Introduction to Educational Psychology that you have taken that help you to understand better about giftedness?

_____

b. Sekiranya anda pernah mengikuti bengkel atau seminar tentang pintar cerdas:
If they have attended workshop or seminar about giftedness:

1. Apakah bengkel/ seminar yang telah anda ikuti?
What was the workshop or seminar that you have attended?

_____

2. Berapa lamakah bengkel / seminar itu diadakan?
How long was the duration of the workshop/ seminar? (in terms of hours, days etc.)

_____

3. Siapakah atau organisasi manakah yang menganjurkan bengkel/ seminar tersebut? Who was the organiser of the workshop/ seminar?
Was it organised by a local or international organisation?

_____

4. Pada pandangan anda, dari segi apakah bengkel/ seminar itu dapat membantu dalam meningkatkan pemahaman anda mengenai pintar cerdas?
In your opinion, in what way the workshop or seminar has served you in understanding giftedness better?

_____

9. Berdasarkan jawapan anda dalam soalan 11, anda nyatakan (berdasarkan jawapan pada kertas soalan pra temu bual)

Based on your answer in question 11, you stated (based on their answers either yes (confident) or no (not confident).
Jika anda dapat menilai / meletakkan satu nilai pada tahap keyakinan anda, apakah nilai yang akan anda berikan kepada diri anda?
If you can rate your confidence, how do you rate your confidence level? (With 5 - Really confident to 1 – Not really confident)

_____

10. Bolehkah anda jelaskan dengan lebih lanjut mengapakah anda berikan nilai (berdasarkan jawapan pada kertas soalan pra temu bual)untuk tahap keyakinan anda?
Can you explain further your reasons in answering question 11 (They are asked to state the reasons of feeling confident or not confident)

_____

11. Jawapan anda dalam soalan no 12 ada menyatakan bahawa (berdasarkan jawapan pada kertas soalan pra temu bual). Bolehkah anda terangkan dengan lebih lanjut mengenai perkara itu?
Your answer on question 12 states that (based on their answers e.g. agree that identification does has it benefit and reasons for such answer etc). Can you elaborate further your beliefs/reasons that labelling will benefit / not benefit students identified as gifted and talented?

_____

12. Berdasarkan jawapan anda dalam soalan no 13, anda menyatakan bahawa anda biasa / tahu tentang proses mengenal pasti pelajar pintar cerdas dan berbakat (sekiranya mereka menjawab 'Ya')
Based on your answer in question 13 (open-ended question), you stated that you are familiar with the identification process of gifted and talented students. If they answer yes (indicate that they are familiar with the identification process for identifying gifted and talented students)

    a. Berdasarkan jawapan anda dalam soalan no 13, apakah proses pengenalpastian yang anda ketahui dan sudah biasa dalam mengenal pasti pelajar pintar cerdas dan berbakat?
    Based on your answer in question 13, what is the identification process that you are familiar with in identifying gifted and talented students?

    _____

    b. Berdasarkan persepsi anda tentang jenis pengenalpastian yang paling tepat, anda menyatakan bahawa(berdasarkan jawapan pada kertas soalan pra temu bual)adalah proses/cara yang terbaik bagi mengenal pasti pelajar pintar cerdas dan berbakat. Bolehkan anda terangkan dengan lebih lanjut jawapan anda? Mengapakah anda berfikir bahawa (berdasarkan jawapan pada kertas soalan pra temu bual) adalah pengukuran yang terbaik?
    In your perception of the best identification type for the identification process, you state that (based on their answers e.g. nonverbal assessment is the best etc.). Can you explain further you answer? Why do you think that (based on their answers e.g. nonverbal assessment is the best etc.) is the best assessment?

    _____

13. Berdasarkan jawapan anda dalam soalan no 14, anda ingin menerima latihan selanjutnya dalam aspek tertentu(berdasarkan jawapan pada kertas soalan pra temu bual)
Based on your answer in question 14 (open-ended question), you would like to receive further training in some of the aspects (based on their answers e.g. teaching or administration aspects etc.).
    a. Pada pandangan anda, mengapakah anda ingin menerima latihan tersebut?
    In your opinion, why do you want to receive such training?

    _____

    b. Pada pandangan anda, dari segi apakah latihan itu dapat memberikan manfaat kepada anda?
    In what way, do you think that such training will benefit you as a teacher?

    _____

14. Berdasarkan jawapan anda dalam soalan no 15/soalan terakhir, (berdasarkan jawapan pada kertas soalan pra temu bual) dianggap penting dalam membina satu pendekatan / cara baharu atau program dalam mengenal pasti pelajar pintar cerdas dan berbakat.
Based on your answer in question 15/ the last question, (based on their answers e.g. appropriate allocated budget from the government etc.) is/are considered to be most important in establishing a new method or programme in identifying and assigning gifted and talented students.

    a. Pada pandangan anda, dari sudut apakah (berdasarkan jawapan pada kertas soalan pra temu bual) dapat membantu dalam hal ini?
    In your opinion, why do you think that (based on their answers e.g. appropriate allocated budget from the government etc.) will help in establishing new method or programme in identifying and assigning gifted and talented students?

    _____

Terima kasih atas jawapan, masa dan juga kerjasama yang telah anda berikan. Pertanyaan amat di alu-alukan sekiranya terdapat sebarang kemusykilan. Transkrip temu bual akan diserahkan kepada anda setelah tamat sesi temu ramah. Setinggi-tinggi penghargaan sekiranya anda dapat mengesahkan ketulenan transkrip sebagaimana yang telah dinyatakan semasa sesi temu ramah/temu bual.

Thank you for your answer, time and cooperation. If you have any question, you are most welcome to ask. A transcript of this interview will be forwarded to you later. It is highly appreciated if you could verify the transcript as authentic as your answers in the interview.

Appendix 18
Letter from Ministry of Higher Education, Malaysia

KEMENTERIAN PENGAJIAN TINGGI MALAYSIA
PERANCANGAN DAN PENYELIDIKAN
PUSAT PENTADBIRAN KERAJAAN
TEL : 03-8883 5384 FAX : 03-8889 3471 WEB : http://www.mohe.gov.my

Ruj. Kami : KPT.R.620 – 1/1/1 Jld. 11 (57)
Ruj. Tuan : UPE: 40/200/19/2399
Tarikh : 25 Mac 2009

SEGERA

Ketua Pengarah
Unit Perancang Ekonomi
(Seksyen Ekonomi Makro)
Jabatan Perdana Menteri
Blok B5 & B6 Pusat
Pusat Pentadbiran Kerajaan Perseketuan
62505 Putrajaya

(u.p. : Pn. Munirah Bt. Abd Manan, Faks: 8888 3798)

Puan,

PERMOHONAN UNTUK MENJALANKAN PENYELIDIKAN DI MALAYSIA
Nama Calon: Hadijah Jaffri

Dengan hormatnya saya diarah merujuk kepada perkara di atas dan ingin memaklumkan bahawa Bahagian ini telah meneliti *proposal* kajian yang dicadangkan oleh penyelidik di atas.

2. Sehubungan dengan itu, sukacita bersama-sama ini dikemukakan ulasan dan pandangan Kementerian terhadap cadangan kajian tersebut seperti di Lampiran 1.

3. Kementerian ini tiada halangan untuk membenarkan kajian tersebut dijalankan dengan syarat **tidak melibatkan responden tahun akhir (final year students)** di atas sebab-sebab tertentu. Walau bagaimanapun, sekiranya sampel kajian melibatkan responden daripada institusi-institusi di bawah

KPT KOMITED.KPT BERSEDIA
Memperkenalkan pengurusan ISO 9001 : 2000

Kementerian Pengajian Tinggi, maka kebenaran menggunakan sampel kajian perlu diperoleh daripada:

Setiausaha Bahagian
Bahagian Perancangan dan Penyelidikan
Kementerian Pengajian Tinggi
Aras 3, Blok E3, Kompleks E
Pusat Pentadbiran Kerajaan Persekutuan
62505 Putrajaya

(u.p. Seksyen Penyelidikan)

Sekian, terima kasih.

"MENERAJUI KEGEMILANGAN ILMU"

Saya yang menurut perintah,

(HJH. RAIHANAH BT. HJ. KHUDRI)
Bahagian Perancangan dan Penyelidikan
b.p. Ketua Setiausaha
Kementerian Pengajian Tinggi Malaysia

Appendix 19
Letter from Ministry of Education, Malaysia

13/03 09 FRI 10:00 FAX

BAHAGIAN PERANCANGAN DAN PENYELIDIKAN DASAR PENDIDIKAN
KEMENTERIAN PELAJARAN MALAYSIA
ARAS 1-4, BLOK E-8
KOMPLEKS KERAJAAN PARCEL E
PUSAT PENTADBIRAN KERAJAAN PERSEKUTUAN
62604 PUTRAJAYA.
Telefon: 03-88846591
Faks : 03-88846579

Ruj. Kami : KP(BPPDP)603/01/Jld 10 (11)
Tarikh : 11 Mac 2009

Ketua Pengarah
Seksyen Ekonomi Makro
Unit Perancangan Ekonomi
Jabatan Perdana Menteri
Blok B5 Aras 4
Kompleks Jabatan Perdana Menteri
Pusat Pentadbiran Kerajaan Persekutuan
62502 PUTRAJAYA
(u.p. Pn. Munirah Bt. Abd. Manan)

Puan,

Permohonan Untuk Menjalankan Penyelidikan di Malaysia
HADIJAH BINTI JAFRI

Dengan hormatnya saya merujuk kepada perkara di atas.

2. Adalah saya diarahkan memaklumkan bahawa Bahagian ini tidak mempunyai apa-apa halangan dan menyokong cadangan yang dikemukakan oleh penyelidik berkenaan untuk membolehkan menjalankan penyelidikan :

" The Conceptions Of Giftedness Among Pre Service And In Service Primary School Teachers In Malaysia And Their Confidence In Identifying Gifted And Talented Students "

3. Bersama-sama ini disertakan ulasan Bahagian ini ke atas cadangan penyelidikan yang dikemukakan.

Sekian dimaklumkan, terima kasih.

" BERKHIDMAT UNTUK NEGARA"

Saya yang menurut perintah,

(DR. SOON SENG THAH)
Ketua Sektor Penyelidikan Dan Penilaian
Bahagian Perancangan dan Penyelidikan Dasar Pendidikan
b.p. Ketua Setiausaha
Kementerian Pelajaran Malaysia

Appendix 20

Letter from Johor State Department of Education, Malaysia

JABATAN PELAJARAN JOHOR,
JALAN TUN ABDUL RAZAK,
80604 JOHOR BAHRU,
JOHOR DARUL TA'ZIM

Telefon:
Pengarah : 07-2361787
Pejabat Am : 07-2361633
: 07-2332200
No. Fax : 07-2385789
: 07-2378319
Peperiksaan : 07-2361979
No. Fax : 07-2369084
e_mail : jpnjohor@joh.moe.gov.my.

Rujukan Kami : JPNJ/31/1128/Jld.04 (3)
Tarikh : 06 April 2009

Hadijah Jaffri
1170 Jalan Ponorogo,
Kampung Sungai Tiram,
81800 Ulu Tiram ,

Tuan,

Kebenaran Untuk Menjalankan Kajian Di Sekolah-Sekolah, Institut Perguruan, Jabatan Pelajaran Negeri Dan Bahagian-Bahagian Di Bawah Kementerian Pelajaran Malaysia.

Dengan hormatnya surat daripada Unit Perancang Ekonomi JPM Bil: UPE:40/200/19/2399 bertarikh 16 March 2009 berkaitan permohonan adalah di rujuk.

2. Sukacita dimaklumkan bahawa Jabatan ini tiada apa-apa halangan bagi membenarkan tuan menjalankan kajian ke sekolah-sekolah **Kerajaan dan Swasta Negeri Johor** bertajuk:

" The Conceptions Of Giftedness Among Pre Service And In Service Primary School Teachers In Malaysia And Their Confidence In Identifying Gifted And Talented Students "

3. Sehubungan dengan itu, tuan boleh berhubung terus dengan Pengetua / Guru Besar sekolah berkenaan bagi mendapatkan maklumat dan tindakan selanjutnya.

4. Sila bawa surat ini semasa membuat kajian.

Sekian, terima kasih.

" BERKHIDMAT UNTUK NEGARA "

Saya yang menurut perintah,

(OSMAN BIN SAFII)
Sektor Pengurusan Sekolah
b.p. Pengarah Pelajaran Johor.

Kajian/Zulkefli – page 1.

SELANGKAH DI HADAPAN

Sijil Pendaftaran
No. PA 0059
Sistem Kualiti MS ISO 9000
Perkhidmatan Awam Malaysia

Malaysian Public Service
MS ISO 9000 Quality System
Registration Certificate
No. PA 0059

Appendix 21

Questionnaire coding response

Question	Coding
A1 Gender	1 = Male 2 = Female
A2 Age	
Pre service	1 = 19-20 2 = 21-22 3 = 23-24 4 = 25 and above
In service	1 = 21-25 2 = 26-30 3 = 31-35 4 = 36-40 5 = 41-50 6 = Over 50
A3 Race	1 = Malay 2 = Chinese 3 = Indian 4 = Others
A4 Education level	1 = SPM 2 = STPM 3 = College diploma/Matriculation/A-level 4 = Bachelor 5 = Others
A4a Secondary school (only for pre service teachers)	1 = National/national type school 2 = Smart school 3 = Vocational school 4 = Boarding school 5 = Others
A5 Status	
Pre service	1 = Full time

Appendix 22

Personal data of interviewees

Group	Gender	Code	Types of interview	Year of study/ teaching	Date of interview	Medium Language of interview
Pre service	Female	PS1F	Formal	4 years	28 April 2009	Malay
		PS2F	Formal	4 years	16 May 2009	Malay
		PS3F	Formal	3 years	28 May 2009	English
	Male	PS1M	Informal*	3 years	23 June 2009	Malay
		PS2M	Informal*	4 years	23 June 2009	Malay
In service	Female	IS1F	Formal	8 years	4 June 2009	Malay
		IS2F	Formal	5 years	23 June 2009	English
		IS3F	Formal	22 years	27 June 2009	English

*Notes: Informal interview were conducted after both participants refused to participate formally in this study. However, both gave their consent for me to use some of their responses from the informal interview to be used in this study when appropriate (see **Chapter 6 – Section 6.4**).

Appendix 23

List of institutions and number of pre service teachers participated in the study

Institutions	**Number of pre service teachers (546 students)**	**Location**
Universiti Pendidikan Sultan Idris (UPSI)	174	Tanjung Malim, Perak
Temenggong Ibrahim Institute of Teacher Education	185	Johor Bahru, Johor
Malacca Malay Female Institute of Teacher Education	82	Durian Tunggal, Malacca
Tun Hussein Onn Institute of Teacher Education	105	Batu Pahat, Johor

Appendix 24

List of selected schools and numbers of in service teachers

Types of school	Name of school	District	Number of teachers	Location
National school (47 schools)	SK Sg Suluh	Batu Pahat	21	Rural
	SK Seri Bertam	Batu Pahat	35	Rural
	SK Angkatan Tentera	Johor Bahru	43	Urban
	SK Sungai Tiram	Kota Tinggi	64	Rural
	SK Kg Maju Jaya	Johor Bahru	41	Urban
	SK Kg Pasir	Johor Bahru	53	Urban
	SK Sri Tebrau	Johor Bahru	51	Urban
	SK Taman Pelangi	Johor Bahru	32	Urban
	SK Permas Jaya 1	Johor Bahru	47	Urban
	SK Taman Perling	Johor Bahru	72	Urban
	SK Taman Suria	Johor Bahru	49	Urban
	SK Desa Cemerlang	Johor Bahru	38	Urban
	SK Taman Mutiara Rini	Johor Bahru	39	Urban
	SK Taman Pasir Putih	Johor Bahru	105	Urban
	SK Taman Sutera	Johor Bahru	32	Urban
	SK Taman Tampoi Utama	Johor Bahru	34	Urban
	SK Kota Masai 2	Johor Bahru	79	Urban
	SK Kampong Melayu	Johor Bahru	72	Rural
	SK Bandar Renggam	Batu Pahat	22	Rural
	SK Seri Lalang	Batu Pahat	37	Rural
	SK Bandar Paloh	Kluang	26	Rural
	SK Abdul Rahman Yassin	Kluang	44	Rural
	SK Bukit Lintang	Kota Tinggi	37	Rural
	SK (Felda) Air Tawar 4	Kota Tinggi	21	Rural
	SK Bandar Mersing	Mersing	38	Rural
	SK LKTP Intar 1	Mersing	26	Rural

	Mersing			
	SK Seri Pantai Mersing	Mersing	37	Rural
	SK Sawah Dato' Mersing	Mersing	41	Rural
	SK Tenglu Mersing	Mersing	26	Rural
	SK (Felda) Tenggaroh 1 Kota Tinggi	Kota Tinggi	25	Rural
	SK Bukit Gambir Muar	Muar	52	Rural
	SK Parit Setongkat Muar	Muar	54	Rural
	SK Parit Kasan Muar	Muar	19	Rural
	SK Pekan Pagoh	Batu Pahat	36	Rural
	SK Seri Bukit Batu Muar	Muar	28	Rural
	SK Simpang 5 Pekan Muar	Muar	21	Rural
	SK Sungai Raya Muar	Muar	19	Rural
	SK Sungai Bunyi Pontian	Pontian	38	Rural
	SK Seri Kembar Pontian	Pontian	23	Rural
	SK Tambang Segamat	Pontian	12	Rural
	SK LKTP Tenang Segamat	Segamat	26	Rural
	SK Senai	Johor Bahru	54	Urban
	SK Taman Indahpura 2	Johor Bahru	37	Urban
	SK Convent Batu Pahat	Batu Pahat	48	Rural
	SK Sultan Abu Bakar (1) Muar	Muar	24	Rural
	SK Sultan Abu Bakar (2) Muar	Muar	18	Rural
	SK Tengku Mahmood Iskandar (2) Pontian	Pontian	31	Rural
National type (Chinese) (7 schools)	SJK C Chong Hwa Sg Ayam	Batu Pahat	8	Rural
	SJK C Tiram	Johor Bahru	137	Urban
	SJK C Jemaluang Mersing	Mersing	15	Rural
	SJK C Pai Chee Mersing	Mersing	25	Rural
	SJK C Bemban Kulai	Johor Bahru	13	Rural
	SJK C Kulai	Johor	80	Rural

		Bahru		
	SJK C Seelong	Johor Bahru	11	Rural
National type (Tamil) (10 schools)	SJK T Seri Pelangi Batu Pahat	Batu Pahat	12	Rural
	SJK T Ladang Ulu Tiram	Johor Bahru	34	Urban
	SJK T Mados Tiram	Johor Bahru	7	Urban
	SJK T Ladang Simpang Rengam	Kluang	5	Rural
	SJK T Ladang Mengkibol	Kluang	13	Rural
	SJK T Mersing	Mersing	7	Rural
	SJK T Jalan Sialang Tangkak	Batu Pahat	24	Rural
	SJK T Ladang Sg Muar	Muar	7	Rural
	SJK T Kangkar Pulai	Johor Bahru	7	Urban
	SJK T Ladang Sedenak Kulai	Johor Bahru	7	Rural
Special Education school	SK Pendidikan Khas Johor Bahru	Johor Bahru	29	Urban
TOTAL	65 schools	8 districts	2268	2 locations

Appendix 25

Subject taken by in service and pre service teachers

Subjects (that contain information about gifted and talented)	Group	Taken	Not taken
• Introduction to special education • Introduction to learning disabilities • Introduction to child development	In service	9 (0.1%)	623 (99%)
	Pre service	396 (72.5%)	150 (27.5%)

Appendix 26

Inter-rater reliability: A Kappa comparison

Inter-rater reliability	Number of raters	Proposition	Reference
Cohen's Kappa	2	• Computation only for two raters • Both raters rate the same items • Aim to determine level of agreement among raters (consistency) • Raters are selected based on the assumption that both are equally competent • No limitation for the categories of item (it could be two or more categories) • Both Kappa (statistics and weighted Kappa) are based on the assumption that the agreement among raters are by chance	Cohen, J. (1960); (1968).
Light's Multiple Rater	More than 2	• Computation for three raters only • Level of agreement among raters are observed internally • An extension of Cohen's Kappa • Raters could be pairwise or g-wise (raters do not necessarily rate similar items) • No limitation for the categories of item (it could be two or more categories)	Light, R. J. (1971).
Fleiss' Multiple Raters	2 and more	• Computation for two and more raters • Items are rated by different pairs of raters, not varying numbers of raters • Based on the assumption that the agreement is by chance • No limitation for the categories of item (it could be two or more categories)	Fleiss, J. L. (1971).

Appendix 27

Three tiers of PCA (A complete table[179])

No	Descriptions	PCA (13)	Proposed (10)	Monte Carlo (6)	Proposed dimensions			Renamed
1	Similar characteristics	8	5	3	Definition	General		Generic views
2	Labelling by experts	8	5	3				
3	Different classification (levels)	8	5	3				
4	Social functions	8	5	3				
5	Experts (definition)	8	5	3				
6	Importance of labelling	11	5	6?				Omitted
7	Hereditary	9	8	6	Value			Genealogical views
8	Resemblance (Parental)	9	8	6				
9	Gender predominance	7?	8	4?				Omitted
10	IQ scores	8	10?	4?	Perception			Omitted
11	Well-balanced	5	1	3				Omitted
12	Academic achievement	7	7	4				Psychosocial characteristics
13	SES	7	7	4				
14	God's given	11?	2?	2?				Omitted
15	Nature VS nurture	11	7	4				Psychosocial characteristics
16	Social contextual definition	7	7	3				Omitted
17	Career path	7	7	4				Psychosocial characteristics
18	Balance superiority	5	1	3	Cognitive	Internal	Specific	Omitted
19	Demonstrability	2	2	1				Discrete characteristics
20	Excellent abilities	2	2	1				
21	More than one domain	2	2	1				
22	Above average ability	2	2	1				
23	Creative	1	2	1				
24	Innate ability	2	2	1				
25	Systematically developed	2	2	1				
26	Information processing (speed)	2	2	1				
27	Memory	1	2	1				
28	Balance of skills and tasks	1	1	1				
29	Analytical	1	1	1	Affective			
30	Critical	1	1	1				
31	Practical	1	1	1				
32	Self-perception (academic competency)	4	1	1				
33	Motivation	5	1	1				Omitted
34	Self-confidence	4	1	1				Discrete characteristics
35	Perfectionist	1	1	5				Omitted

[179] For every item with a question mark (?), it means that the item has loading in more than one component from any PCA and thus, further investigation is attempted to decide its suitability to be grouped in either one of the components in the final analysis.

36	Precociousness (early age)	4	3?	1?				Omitted
37	Vulnerability	13	9	4				Psychosocial characteristics
38	Peculiar behaviours	13	9	4	Behaviour			
39	Perseverance (task completion)	4	1	1?				Omitted
40	Social comparison strategies	12	1	5				Omitted
41	Social adjustability	6?	3	2				Omitted
42	Brain activation	4	3	1?	Bio			Omitted
43	Brain size	10	6	5				Biological characteristics
44	Brain weight	10	6	5				
45	Expert identification	6	6	2	Assessment	External		Omitted
46	Age limit	6	3	2				Future success catalyst
47	Early identification	6	3	2				
48	Criterion-performance based	12	10	2				Omitted
49	IQ tests	4	3	2				Future success catalyst
50	Media	12	4	2				
51	Deliberate efforts	4	3	2	Program			
52	Education provision	3	3	2				Omitted
53	Enrichment programmes	12?	4	2				Future success catalyst
54	Acceleration programme	3	4	2				
55	Limited intervention/provision	3	4	2?				Omitted
56	Curriculum	4?	3	2				Future success catalyst
57	Parental education	3	4	2	Sig			
58	Parenting style	3	4	2				
59	Teachers' values	8	5	2				
60	Mentorship	8	5	2				

Appendix 28

Illustration of analysis from responses (semi structured questionnaires and interviews)

a) Characteristics
   i. Of gifted individuals
   ii. Of talented individuals
   iii. Similarities/Differences

Research Question	Questions in research instrument	Levels of Coding		
		Level I codes Original responses from participants[180]*	Level II codes Categories derived from Level I codes (Constituent themes)	Level III codes Constructed themes from Level II codes (Major themes)
RQ1: What are the conceptions of gifted and talented among pre service and in service teachers in Malaysia?	Semi structured questionnaires	Semi structured questionnaires		
	1) What do you understand about giftedness? 2) What are your conceptions of gifted individuals? 3) In your opinion, what are the characteristics of gifted individuals?	An individual has extraordinary ability in a field and usually in mathematics and science (PS2F 16 May 2009) The gifts that gifted or talented individuals have are extraordinary that surpass the age group performance and this extraordinary abilities have to be polished and trained so it will not be lost or wasted (IS1F 4 June 2009) Gifted individuals have different ways in having their mind work (PS3F 28 May 2009)	• Superiority (ability)	Characteristics for gifted individuals

[180] Note: * For illustration, only selected excerpts are presented in this table as examples.

		The gifted individuals have high IQs , able to concentrate and finish a given task perfectly (PS1F 28 April 2009) They have that inborn gift in them which makes the learning process easier (IS3F 27 June 2009)	• Domain specific • Peer comparison • Uniqueness • Natural predisposition • Heritability • God's gift • High IQ scores • Sociability (behavioural)	
	Interviews	Interviews		
	1) Based on your answers of the characteristics of gifted individuals, could you explain further your given answers?	They are the chosen one to endow with gifts from God in which their gifts could fascinate as well as baffle others (IS1F 4 June 2009) Some of the gifted individuals are may be are not as sociable (IS2F 23 June 2009) Gifted are those who are given special ability (PS2F 16 May 2009) Gifted individuals are those who have IQ score of 140 or more (PS3F 28 May 2009)		
RQ1: What are the conceptions of gifted and talented among pre service and in service teachers in Malaysia?	Semi structured questionnaires	Semi structured questionnaires		
	4) What are your conceptions of talented individuals? 5) In your opinion, what are the characteristics of talented individuals?	A talented individual has talent in certain field. They are not necessarily having high IQ. (PS1F 28 April 2009). Talented individuals are not rare (PS3F 28 May 2009). A talented individual is those who can		

		recognise his ability and able to show that talent easily as compared to other people (IS1F 4 June 2009).	• Intensity • Not rare (common) talent • Nurture • Normal range of IQ score • Mastery and duration	Characteristics for talented individuals
	Interviews	Interviews		
	2) Based on your answers of the characteristics of talented individuals, could you explain further your given answers?	Talented individuals have a uniquely bodily movement (PS1F 28 April 2009). Talented individuals are those who have the talent… they can do something which other people can do, for example, singing but they can expand their talents or do it in 'greater' way or achieve better (PS2F 16 May 2009). When we give a task… okay, related to talent, when other students might struggle with the task, he takes less time to master it… and he performs the task easily (IS1F 4 June 2009).		
RQ3: Is there any difference in the conceptions of giftedness among pre service and in service teachers in Malaysia?	Semi structured questionnaires	Semi structured questionnaires		
	6) Do you think that gifted individuals also can be regarded as talented as well and vice versa? - (Yes/No) - State reasons	Yes. The characteristics are related (IS2F 23 June 2009). Not sure because talented individual does not necessarily gifted (PS1F 28 April 2009).	• Creative • Types of ability (physical vs.	Similarity/ Differences
	Interviews	Interviews		

	1) Based on your answers of the characteristics of gifted individuals, could you explain further your given answers? 2) Based on your answers of the characteristics of talented individuals, could you explain further your given answers?	They can because both of them apparently are creative. They might be, have an inborn talent but talented one, you can train. Which you have is already is originally naturally have in yourself (IS2F 23 June 2009). I think they are different because the gifted those who are given special ability. May be they are talented but for the talented, they are not gifted because talent can be developed (PS2F 16 May 2009). There are some characteristics that could be the same, while others are different. Sometimes, the gifted could also be talented in psychomotor aspect and the talented do not necessarily gifted (PS1F 28 April 2009)	cognitive) • Talent development • Rare or common	

b) Sources of information and its adequacy

Research Question	Questions in research instrument	Levels of Coding		
		Level I codes Original responses from participants*	Level II codes Categories derived from Level I codes (Constituent themes)	Level III codes Constructed themes from Level II codes (Major themes)
RQ2: How do Malaysian pre service and in service teachers arrive at the conceptions of giftedness? a) What are the sources of information about giftedness according to them?	Semi structured questionnaires	Semi structured questionnaires	• Media (newspaper, internet, TV) • Experience • Textbooks • Discussion	Formal / Informal
	9) Where do you get information about gifted and talented students/individuals?	Television and internet (PS1F 82 April 2009). Media, newspaper, internet and television (PS2F 16 May 2009). Reading (internet) and discussion with lecturers (IS2F 23 June 2009) Reading, personal experience and doing assignments (IS3F 27 June 2009).		
b) How adequate the	Interviews	Interviews		

information in helping them to understand the concepts and issues related to giftedness?	4) You have listed several questions that you have about giftedness, so how do you plan to find the answer to those questions? 5) As stated, you get information about gifted and talented individuals from various sources. Do you think that you get enough information about gifted and talented individuals from your reading?	Basically, from the internet or magazines… from the electronic and printed media (PS1F 28 April 2009). I will ask experienced people about it or find information about them from various media such as television or internet (PS3F 28 may 2009). It seems that there are limited books about gifted and talented available. May be it can be found in psychology books… about gifted and talented… ways to identify them (IS1F 4 June 2009).		

c) Confidence

Research Question	Questions in research instrument	Levels of Coding		
		Level I codes Original responses from participants*	Level II codes Categories derived from Level I codes (Constituent themes)	Level III codes Constructed themes from Level II codes (Major themes)
RQ4: Do pre service and in service teachers confident in identifying students as gifted and talented?	Semi structured questionnaires	Semi structured questionnaires		
	11) Are you confident to identify students as gifted and talented? - (Yes/No) - State reasons	No. I am not trained and do not have enough exposure to identify (PS1F 28 May 2009). No. Because I do not know the specific criteria or characteristics in identifying the related students (PS2F 16 May 2009). Yes. We can identify gifted students based on academic performance in class (PS3F 28 May 2009). Yes. This because these individuals have specialties that normally cannot be found in other individuals in a same age group (IS1F 4 June 2009).	• Adequacy of information and experience • Uncertainty of information (accuracy and applicability) • Guideline	Teacher preparation/ readiness
	Interviews	Interviews		
	9) Based on your answer in Q11, you stated (based on their answers either Yes or No). If you can rate your	Have knowledge, information but cannot apply it because don't know how far the knowledge is accurate (or not). Information just from reading but not really understand how that knowledge could be applied in	• School facilities • Education programs	Teaching practice

	confidence, how do you rate your confidence level? (with 5 – really confident and 1 – not really confident) 10) Can you explain further your reasons in answering Q11 (they are asked to state the reasons of feeling confident or not confident)	class. I have never seen before… (PS1F 28 April 2009). We don't have a vehicle (an identifying mechanism – my comment), we don't have the instrument, we don't have any test in school ….. In my school, we don't have a '*pemulihan*' (translated as remedial class – my comment), we do have a '*bimbingan dan kaunseling*' (translated as guidance and counselling – my comment), but it is 'forced' into which teacher or whose teacher should be responsible in this area. There is no particular teacher in handling (gifted students – my comment). So may be if we do (to identify – my comment), if we really need to identify gifted children, should we put a title or responsible (sic) to certain teacher that have the ability or have gone through proper training? They know how to identify (IS2F 23 June 2009).		

Note: * For illustration, only selected excerpts are presented in this table as examples.

d) Knowledge and awareness of assessments

Research Question	Questions in research instrument	Levels of Coding		
		Level I codes Original responses from participants*	Level II codes Categories derived from Level I codes (Constituent themes)	Level III codes Constructed themes from Level II codes (Major themes)
RQ5: How aware do pre service and in service teachers about identification procedure and/or assessments in identifying gifted and talented students?	Semi structured questionnaires	Semi structured questionnaires		
	13) Are you familiar with the identification process of identifying gifted and talented students? - (Yes/No) - State reasons	All of the participants answered 'No' to Item no. 13 (semi structured questionnaire)	• No exposure • Lack of information	Limitation on awareness of identification procedure and/or assessments
	Interviews	Interviews		

	If they answer 'Yes' they are asked the following questions. 12) Based on your answer in Q13, you stated that you are familiar with the identification process of gifted and talented students. a) What is the identification process that you are familiar with in identifying gifted and talented students? b) In your perception of the best identification type for the identification process, you state (based on their answers). Can you explain further your answer? Why do you think that (based on their answers) is the best assessment?	Since all participants answered 'No' in item no. 13 posed in the semi structured questionnaire, therefore, no questions are asked in the interview. However, participants' responses throughout the interview which highlight any issue of assessment or identification process as analysed and presented in **Chapter 7** are used to explore participants' awareness indirectly on this matter.		

Note: * For illustration, only selected excerpts are presented in this table as examples.

e) Issues (that participants intrigue about)

Research Question	Questions in research instrument	Levels of Coding		
		Level I codes Original responses from participants*	Level II codes Categories derived from Level I codes (Constituent themes)	Level III codes Constructed themes from Level II codes (Major themes)
RQ6: How do pre service and in service teachers perceive this issues: e) Intriguing aspects about gifted and talented individuals?	Semi structured questionnaires	Semi structured questionnaires	• Characteristics (similarities/differences) • Superiority	Psychological
	7) Please list some of the issues that intrigue you about gifted individuals as well as talented individuals 8) Please list up to five questions you have about giftedness	What are the standards in acknowledging giftedness? (PS2F 16 May 2009). What should I do for these gifted students? (IS1F 4 June 2009). What are the education methods or approaches in teaching gifted children? (IS2F 23 June 2009).		
	Interviews	Interviews		
	3) Can you explain further the issues that intrigue you about gifted and talented individuals?	What I want to know is 'What are the differences between them' and 'What are the characteristics that differentiate these two groups' (PS3F 28 May 2009). I am more interested in knowing their behaviours, life styles and aims in life (PS1F 28 April 2009). The issue is more on <u>how to deal with them</u>... the first thing that we need to address is	• Social function (aims, contribution) • Adjustability	Social
			• Identification (assessments) • Teaching practice	Education provision

		'how to identify them?'. The things that distinguish a gifted student with talented student… what are the differences?… what are the characteristics… if we look at Malaysian context, what are the characteristics of gifted… what are the characteristics of talented… as guideline that we can use… as teachers, we might need such guideline. The second thing is once we have identified him/her as gifted and talented, what should we do about it? Do we… meaning, need to make a special arrangement for him/her? Assign a special teacher for him/her?… Or do we… do we need to have a special school for him/her or what? What should we do to the parents too? What are the advices we can give to parents? (IS1F 4 June 2009).		

Note: * For illustration, only selected excerpts are presented in this table as examples.

f) Adequacy of teacher's training

Research Question	Questions in research instrument	Levels of Coding		
		Level I codes Original responses from participants*	Level II codes Categories derived from Level I codes (Constituent themes)	Level III codes Constructed themes from Level II codes (Major themes)
RQ6: How do pre service and in service teachers perceive this issues: f) Adequacy of teaching training?	Semi structured questionnaires	Semi structured questionnaires	• Limited subjects • Theoretical knowledge vs. practical knowledge	Formal training
	10) How adequately do you think your teaching training in preparing you to identify gifted and talented students? 14) Please indicate in which aspects of educational training you would like to receive in enhancing your understanding about giftedness	It is not enough. Explanation is inadequate (PS1F 28 April 2009). The existing teaching training is not emphasised on gifted students (PS2F 16 May 2009). I feel that teaching training can help in spotting gifted and talented students but teaching experience will be more helpful in this especially when we are dealing with the problem –'What is the best way to deal with the specialty of this individual?' (IS1F 4 June 2009). Not adequate in pedagogy but do expose trainees with multiple teaching theories (IS2F 23 June 2009).		
	Interviews	Interviews		
	7 – pre service- & 8 – in service) Based on your answer about the	Most of the topics about giftedness is not many, there are some were taught in educational psychology only. There are brief		

	adequacy of teaching training that you are undergoing **(pre service)**/have undergone **(in service),** you said that it is (based on their answers) a) What are the subjects other than Introduction to Educational Psychology that you plan to take/are taking/have taken that help you to understand better about giftedness? **(pre service/ in service)** b) If you have attended any workshop/seminar about giftedness - What was the workshops/seminar? - How long was the duration of the workshop/seminar? - Was it organised by a local or international organisation? - In your opinion, in what way the workshop/seminar has served you in understanding giftedness better?	explanations, but not in details (PS1F 28 April 2009). When we are studying, during teacher training, we only learned theories. And the theories that we learn are at surface level only, not giving the real picture. When we read, we have a picture in our mind about something, but when in reality, it is different from what we have in our mind. It is more than what we have learned (IS1F 4 June 2009). We do not have special classes or special programme for these students (IS3F 27 June 2009). *All participants stated that they never attended any workshop or seminar on giftedness.		

Note: * For illustration, only selected excerpts are presented in this table as examples.

g) Labelling

Research question	Questions in research instrument	Levels of Coding		
		Level I codes Original responses from participants*	Level II codes Categories derived from Level I codes (Constituent themes)	Level III codes Constructed themes from Level II codes (Major themes)
RQ6: How do pre service and in service teachers perceive this issues: c) Labelling?	Semi structured questionnaires	Semi structured questionnaires	• Assign educational provisions • Enhance ability • Need for educational provisions	Teaching practice
	12) Do you think that is it necessary to label students as gifted and talented? - (Yes/No) - State reasons	Yes. To expand their ability and talent (PS1F 28 April 2009). No. Because it is best if they do not know in order to develop or maintain humbleness. If it is for the best, it is best if they know or do not know (PS2F 16 May 2009). Yes. It is easier to assign hem and thus it is easier to teach them (PS3F 28 May 2009). No. Do not have to label them as they have to learn the way of mixing around with others as a whole in class (IS1F 4 June 2009). No. Because every individual is unique and special in his own way (IS3F 27 June 2009).		
	Interviews	Interviews		
	11) Your answer in Q12 states that (based on their answers). Can you elaborate further	For me, it is important for us to identify them because we don't want them to miss from attending any programme that could enhance or develop their gifts… existing		

	your beliefs/reasons that the labelling will benefit / not benefit students identified as gifted and talented?	talents… we don't want them to be excluded or… overlook them if we don't label them. Not only about them… if there are programme for gifted… but also exposure needed to be given to them too… therefore, they can use their intelligence to its maximum (PS1S 28 April 2009). We can label them when we have some special programme. You don't have special programme for them to go on, to follow up, it defeats the purpose of labelling. For me, if you want to label them, let's have special programmes, special activity for them, I would say (IS3F 27 June 2009).	• Social contribution • Social action or behaviour (humility)	Social function

Note: * For illustration, only selected excerpts are presented in this table as examples.

h) Elements for development of gifted education

Research Question	Questions in research instrument	Levels of Coding		
		Level I codes Original responses from participants*	Level II codes Categories derived from Level I codes (Constituent themes)	Level III codes Constructed themes from Level II codes (Major themes)
RQ6: How do pre service and in service teachers perceive this issues: d) Important aspects in developing gifted education in Malaysia?	Semi structured questionnaires	Semi structured questionnaires	• Identification • Experts • Education provisions • Teachers	Development elements
	15) What do you consider to be important criteria in establishing a new method or programme in identifying gifted and talented students?	Whatever it is, I think the method or programme need to have the criteria to develop giftedness or talent for good purpose (PS2F 16 May 2009). Gifted students need to be given a training or activity that is harder and it is supervised by people who are expert in the respective field (IS1F 4 June 2009). The teachers themselves must have the capability, the school provides suitable facilities and learning materials, the class size should be smaller; curriculum must be specially designed to expand their talent (IS2F 23 June 2009). There must be suitable and challenging task to meet the level of achievement of the students (IS3F 27 June 2009).		
	Interviews	Interviews		

	14) Based on your answer in Q15, (their responses) is/are considered to be most important criteria in establishing a new method or programme in identifying and assigning gifted and talented students. a) In your opinion, why do you think that (based on their answers) would help in establishing a new method or programme in identifying and assigning gifted and talented students?	If there is a guideline, in identifying, we are not worry about it and we are more expert and have more knowledge in identifying the, (PS2F 16 May 2009). It would be better if we know their needs, what they need… they should focus on their need. If they need certain task or activity, to enhance their ability, we focus on that… their need (PS3F 28 May 2009). They are the one responsible for it. Of course, this gifted… come from different families, different backgrounds, perhaps they can come from rural areas, the government is the one can detect them. Because they will go to national school, the government is the one who handles the national schools. So they are the first one to know if the gifted students or not. They have the role to play. They should be responsible to these kids… gifted individuals. If they treat them wrongly, it will be their loss and also the teachers, okay (PS2F 16 May 2009).		

Note: * For illustration, only selected excerpts are presented in this table as examples.

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