CPD for teachers and effective schools

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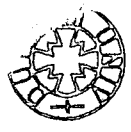

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Supervisor: Professor William Williamson

ABSTRACT

CPD For Teachers and Effective Schools

Purpose:

In Singapore, serious attempts have been made by the Government to develop a many layered, multi-faceted response, changing and adapting to shape long-term and productive responses. Another major societal change that gives impetus to teachers' staff development in Singapore is the changing scene of Singapore society in terms of social structure, norms, aspirations, behaviours and values.

All these mean that Singapore teachers will need to assume responsibility to grow as adult learners by participating actively in different types of CPD activities (Formal, Informal, Self-Directed and Nonformal Activities), to change their mindsets, to think, and to tailor solutions with Principals to school problems in order to succeed in their role as lifelong learners and change agents.

The main purpose of this study is to find out teachers' needs, and school and CPD factors that influence their participation in CPD. It is also intended that the empirical data from schools can be integrated with findings from literature, together with the personal philosophy of the writer, into a comprehensive and effective school programme that meets the needs of Singapore primary schools in the 21st century.

Design of the Study

The instrument that was used to collect data was self-constructed and designed with input from teachers and information gathered about CPD from literature. Part Two

No 2 (1) was adapted from the 'Assessment of Performance of Teaching' (NIE) and from the instrument that was self-developed by the researcher for her M Ed paper (University of Sheffield, 1999) on 'An Induction Programme for Beginning Teachers in Singapore Primary Schools'. The Role of Principals scale and the CPD Activities scale were adapted from readings by Wideen and Andrews (1987) and an instrument used by Fesslar (1990) for his study on Principal and teacher behaviours towards CPD activities. The rest of the questionnaire was self-constructed based on the researchers' literature review.

The final questionnaire comprised three main measures: (1) Personal Factors Measure, (2) School Factors Measure, (3) CPD Activities Measure.

Personal Factors Measure

The Personal Factors Scale was developed to measure teachers' perceptions about their needs or skills by age, gender and years of teaching experience. This comprised thirty-six items on six aspects namely, planning, managing, instructional techniques, interaction, assessing and providing feedback and relations with community.

Qualitative data was obtained through an open-ended item on teachers' perceptions of *Personal Qualities of Good Teachers*. This would give added information on teachers' perceptions of needs (or skills) as well as knowledge, attitudes and values of teachers that can effectively manage the educational changes.

School Factors Measure

This measure was developed to measure teachers' perceptions about four subscales: the Role of Principals (6 items), Helpfulness of Leaders (3 items), Helpfulness of Colleagues (3 items), Types of School Resources (6 items). Qualitative data on School Resources was obtained through three open-ended questions to find out preferred timing and venue of CPD activities.

CPD Factors Measure

This measure sought to measure teachers' perceptions about current CPD activities. It has two subscales:

Academic Development Activities. This subscale contains sixteen items that measured the involvement of teachers in Formal (3 items) and Informal Activities (13 items).

Professional Development Activities. This subscale contains eight items that were developed to measure current teacher involvement in types of CPD activities as adult learners. Three items were developed for the Self-Directed Activities subscale. Five items were developed for the Nonformal Activities subscale. Qualitative data on CPD activities were sought through two open-ended questions: What will motivate them and what would hinder them from participating in CPD activities?

Procedures:

To understand teachers' perceptions of CPD in Singapore schools, data was collected through a self-constructed questionnaire survey, group discussions, interviews, content analysis of school records and a questionnaire survey. The writer administered a total of 450 questionnaires (inclusive of those from the pilot survey) to a sample of

English medium teachers from seven primary schools. Of these, 400 teachers (88.9%) responded to the questionnaires and they submitted a list of 310 (76.25%) usable responses.

The researcher also interviewed a total of 38 staff members, of which 10 were selected specifically to represent the subgroups (age, years of experience, gender) and studied school documents. The data collected was analysed and interpreted, so that a profile of a school-focused CPD programme could be developed. Quantitative data was analysed and intepreted using the Principals Component Analysis, Mean, Standard Deviation, ANOVA, Multiple Regression Tests and MANOVA. Qualitative data was analysed using percentage scores. All data were analysed with the aid of the SPSS system.

Findings:

Quantitative results, yielded from the testing of hypotheses in a proposed CPD model (conceptualised based on literature and the researcher's experience), showed that in Singapore, the level of primary school teachers attending CPD activities was not related to intrinsic factors or to their own perceptions about their own needs for development. All female and the youngest teachers attended CPD most keenly. Male and older teachers appeared to have the lowest level of needs and did not participate keenly in CPD.

The level of primary school teachers attending CPD activities was related to the extrinsic or school factors: Formal Activities were related to Leaders and School Resources; Informal Activities were related to Colleagues and School Resources; Self-

Directed Activities and Nonformal Activities were related to the Role of Principals. All teachers appeared to be satisfied with the level of support rendered by Leaders, Colleagues and the kinds of School Resources (school materials) provided, although most felt that the venue, timing and planning of CPD could be improved.

The finding pointed clearly to the need for adequate support from Principals. Specifically, Principals should ensure that certain processes and supports are provided within a learning community. They could lend more support and show more interest in teachers' development, be involved in activities such as setting up a structure for a systemic CPD plan, working at establishing a positive school climate for continuous learning, assuming leadership through interclass visitations, peer coaching, demonstration, feedback and follow up, and having an annual plan for teachers' CPD, then teachers will be more likely to participate in CPD activities.

The study showed that different teachers who are at different professional development phases and stages would have different needs. The study also extends literature in that it provides data on gender, in the context of the Singapore educational scene. The study showed the least difference in needs for gender, when compared to age and years of difference.

Qualitative data yielded from the study confirmed a range of 'good teacher' personal qualities that will help teachers to address the changes effectively and the preferred components of an integrated CPD programme that Singapore teachers will find useful for their professional development.

Based on the research, it was concluded that an effective CPD programme should be needs related, job relevant, freely chosen and management supported. The essential features of the school-focused CPD model, in order of importance, should involve more of the seven top ranked components such as the formation of Peer Support Groups, Peer Coaching, Mentoring, On-going In-service, Demonstration Lessons, Team Teaching and Coaching for Reflective Thinking.

A framework for a school-focused CPD model to foster a professional development partnership between the school and individuals was proposed. In order to meet the changing needs of society and the school environment, the study recommended a revised CPD model with the following built-in features for effective CPD for Singapore schools:

1 Ensure a Relevant, Well-designed and Comprehensive CPD Programme

2 Develop a School-focused CPD Model

3 Use a 'People-Oriented' Approach

4 Provide Systematic Administrator Support

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CHAPTER FIVE

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Acknowledgements

I wish to thank God for giving me this opportunity to undertake this course, granting me the time and the wisdom and for bringing people into my life to encourage me through the course.

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CHAPTER ONE

THE RESEARCH STUDY

Introduction

School improvement strategies depend crucially on the level, quality and focus of continuing professional development (CPD) programmes. This study shows that the situation of CPD in Singaporean education is not yet satisfactory and establishes the main changes that need to be introduced to help government policies in education to become more effective in promoting improved school performance.

Chapter One presents the background on CPD in Singapore and explores problems of CPD in terms of meeting teacher effectiveness, especially in terms of meeting staff needs and competencies. It provides the rationale for the study and presents the research objectives of the study. Chapter Two provides the theoretical and research literature most relevant to the study of staff needs and concerns, such as factors influencing effective CPD. It presents the research questions as well as the theoretical framework of the study. Chapter Three explains the procedures used in sampling and data collection, the instruments used and the statistical methods used for analyses of data. Chapter Four presents the analyses and discussion of key findings in relation to the research questions, while Chapter Five presents a summary conclusion and discusses implications for school policies, as well as recommendations for a more effective CPD model based on the findings.

Background

Over the last three decades, massive efforts have been undertaken by many countries to reform schools. School reforms involve change and innovation. Far reaching educational changes encompass the use of technology in education to accede to demands for accountability to the public, and major developments in curriculum to cater to the diversity in student and teacher quality.

For change to be successful, it is imperative that teachers develop new knowledge and that working conditions must allow them to develop the competencies that are needed to satisfy the diverse expectations from students and the community. To be successful, change must be owned and institutionalised in ways suited to the particular needs of individual schools and their staff. Appropriate CPD is a powerful vehicle for implementing innovation to enhance the quality of teachers and to improve schools and it has long been recognized that schools must pursue CPD to change teacher practice and improve student performance (Sparks & Loucks-Horsley, 1989; Fullan, 1991; Hargreaves, 1994; Craft, 2000).

Clearly, there exists a significant relationship between staff development and school improvement in that staff development contributes to changes in individual's knowledge, understanding, behaviors, skills, values and beliefs (Hargreaves, 1994; Guskey & Sparks, 1996; Glover & Law, 1996; OECD, 1998). Teachers as effective change agents should possess knowledge and expertise regarding content and also be involved in the process of the implementation and management of change (Fullan, 1997; Craft, 2000). In addition, widespread and sustained implementation of practices

require a new form of CPD which must not only affect the knowledge and attitudes of teachers, but also alter the cultures and structures of schools in which teachers work.

Educational Changes in Singapore

The education scene in Singapore is undergoing major rapid changes even as Singapore faces tremendous economic and technological competition from the rapidly developing neighbouring countries in Asia. Perhaps more than ever before, there is a strong recognition that, with her limited natural resources and to stay competitive and attain even higher standards, there is a need for constant upgrading of skills and knowledge. Hence the Government has, since the mid-nineties, embarked on a vigorous drive to continually upgrade the national workforce. This drive was accompanied by the national call for excellence both in schools and in society at large. Implicit in this call is the Government's firm belief that 'people are Singapore's only resource and educational opportunities must be open to all...Singapore must remain committed to developing the full potential of every citizen' (Singapore 21 Committee, 1999, p6).

To adapt to changing circumstances, Singapore's education system has been repositioned. Schools are given a strong mandate to develop future generations of thinking and committed citizens who are capable of making good decisions to keep Singapore vibrant and successful in future. The Education Minister, Rear-Admiral Teo (1997), had set forth his vision to drive the education system in high gear into the 21st century, as encapsulated in the national slogan 'Thinking Schools, Learning Nation' (TSLN). This vision encompasses a total learning environment which includes students, teachers, parents, workers, companies, community organisations

and government; for 'it is the collective capacity to learn that will determine our well being' (PM Goh, 1997, p1).

In direct response to the vision, the Ministry of Education (MOE) has commissioned three waves of TSLN projects that would translate the new direction into practice and result in major changes in the educational system. Underpinning these changes is a conscious philosophical shift from an efficiency-driven to an ability-driven paradigm in education. The two essential tenets of the ability-driven education system are maximal development and maximal harnessing of the different talents and abilities of every child for the benefit of the community. The ability-driven system requires some form of customisation of the curriculum and pedagogy so that students with different needs and abilities are taught in different groups and in different learning environments. A new, flexible curriculum is needed. This new curriculum should emphasise the understanding of concepts, the process of learning and the acquisition of skills.

The ability-driven paradigm is accompanied by three major initiatives: 1) the concept of 'thinking schools and learning nation' which is intended to galvanize the entire nation to develop a new set of skills, attitudes and independent thinking; 2) the notion of National Education which is aimed at promoting cultural and moral values; 3) an overwhelming prominence on computer literacy in the IT Masterplan in which schools are electronically linked to knowledge hubs such as the Internet and websites.

Against this 21st century backdrop of educational innovations in Singapore, a new school management governance has emerged. More autonomy is being devolved

to schools and the 4/3 Approach that is framed by the School Excellence Model, is advocated for service excellence. Schools have been grouped together in clusters headed by Superintendents and these clusters are given extra resources and greater freedom of action. The S21 movement, that seeks to navigate a vision of Singapore to be a best home for every Singaporean, the Work Improvement Teams (WITs) and the Educational Suggestions Scheme (ESS) for teachers to give feedback for school improvements, are set up to nurture a culture of innovation and enterprise at all levels.

All these changes in school governance are directed to empower schools to constantly review the way things are done and to come up with fresh ideas for continual improvement of the system. The self-renewal is an imperative if schools are to become learning organisations and teachers to be 'role models in....thinking, learning and innovating' (Wong, 1999, p1). Therefore, CPD is crucial as it addresses the growth of both the organisation and the individual.

The need for self-renewal also comes at a time when teachers are apprehensive about increasing parental expectations and uncertain about their new roles in the new economy. Bastiani (1987) who emphasised the importance of home-school liaison, noticed a decade ago that parents were exerting a steady pressure on schools and the system to oblige them to recognise their rights and expectations. In Singapore, parents have become more educated, affluent and articulate in voicing their demands. They no longer place their complete and unconditional trust in teachers' professionalism. They are beginning to shop for education services and are willing to go to great lengths to secure the best school. The demand for quality

provisions adds a new dimension of complexity to the collaboration between teachers and parents on a professional level.

The transition from an education system to an education market place where parents who are now more demanding and more able to make informed choices has a dynamic impact on the marketing strategies of schools. As schools become more accountable to the MOE and to the public to deliver quality education, it is increasingly important for school leaders, as in other parts of the world, to understand the fundamental tenets of the concept of marketing; to develop 'responsive' schools by making every effort to satisfy the needs and wants of its customers and by reshaping the governance and structures of schools as a means to increase their effectiveness (Day, 1999). This means that schools must articulate their own vision, and have a staff development plan to manage a new professional image.

Implications for Singapore Teachers and their Continuing Professional Development

What do these major educational initiatives and societal changes mean to Singapore teachers? For one, the changes suggest a radical re-definition of the role and image of teachers as 'lifelong learners' (Simmons & Schuette, 1988, p23). If schools are to become learning organisations, teachers must necessarily develop as effective adult lifelong learners. The move towards the knowledge-based economy means that teachers must adopt a different mindset towards teaching. They have to move away from the traditional notion of teachers as transmitter of knowledge to one in which the teacher is a facilitator of thinking and learning. This necessitates new ways of teaching in the classroom. Finally, by treating parents as clients, teachers now assume a higher level of responsibility on their part in their children's education.

They are expected to collaborate professionally and closely with parents in nurturing the child.

In short, educational and societal challenges require that teachers have the right values, beliefs and attitudes to develop as lifelong learners. They need to recognise that education is a process, not a one-off incident. As Jackson noted, pre-service training is 'only the first stage of becoming a teacher' (1986, p38). The recognition that even the very best of pre-service teacher education, regardless of its length and intensity, cannot equip one for a lifelong career means that continued growth and development are imperatives for teachers. In the course of their career, they will experience a variety of forces that will produce change in knowledge, skills and attitude. They need career-long CPD opportunities in order to upgrade themselves.

Sarason (1990) too noted that 'teachers are psychologically alone even though they are in a densely populated setting' (p106). The daily life of a teacher can be described as a lonely one. Little opportunity is provided for the sharing of personal and professional knowledge among teachers. Researchers (Alfonso & Goldsberry, 1982; Rodriguez & Johnstone, 1986; Wideen & Andrews, 1987) pointed out that teachers working in isolation are unlikely to have any effect on teacher improvement. This isolation poses a formidable barrier to teachers working collectively to expand their level of expertise and to significantly impact school achievements. There is therefore a need for the development of collegial relationships that are growth producing. Opportunely, CPD serves as a powerful channel for schools to forge norms of collaboration (Leithwood, 1990). The eventual outcomes are positive:

reduced fear of risk-taking, greater cohesion among staff, increased social support and enhanced student achievement (Johnson & Johnson, 1987; Joyce, 1990; Lieberman & Miller, 1991).

Statement of the Problem

The reliance on teachers to provide and maintain effective educational programmes cannot be treated lightly. Teachers are the heart and soul of education (Rear-Admiral Teo, 1997). Quality educational programmes must necessarily be implemented by competent personnel. In the absence of credible professional development programmes, school improvement cannot be successfully achieved. The purpose of CPD is to enhance human potential so that every person can achieve a higher standard of attainment, success and excellence. This concept implies that so long as people make a crucial difference in the school operation, their CPD will be a vital concern. It follows then, that if schools are to succeed in their many goals, Principals are crucial in bringing success to student learning and improved school performance. School personnel must continuously expand their knowledge and skills, be aware of new challenges and be encouraged to solve problems, especially student-achievement problems, collectively: CPD is widely seen as holding the most promise in addressing these problems.

To help teachers in the self-renewal process and to become effective collaborators, the MOE has made an enormous investment in teacher professional development. It has tasked schools to ensure that the entire teaching force of 24,574 teachers (Education Statistics Digest, 2000) is given the right to 100 hours

individually of continuous training and professional upgrading each year. This means a lot of time and money poured into CPD. So far, CPD activities have been driven by the MOE and school leadership with the aim of equipping staff with the attitudes, skills and knowledge to implement the TSLN initiatives. CPD programmes have been designed specifically to help teachers meet the challenges of this vision.

Implementation of CPD is fraught with challenges that can potentially hinder the effectiveness of the programmes. First, schools are rapidly changing and teachers may not be able to cope constructively with changes in technology and in our social fabric. Schools are being asked to take on a whole range of new tasks - to identify their niches, to emphasise an ability-driven education, to teach directly about the world of work, to teach initiative and adaptability rather than mere content, to cope with changes in the organisation of the school itself and to learn new skills in listening, explaining and justifying practices to parents. All these pressures require a new kind of political wisdom from teachers and put a constraint on teachers' time in achieving the intended objectives of CPD.

A crucial question then is: How ready are the schools to take advantage of the resources available to upgrade their teaching staff? Indeed, schools are so busy implementing the new initiatives that require a huge amount of teacher time and energy to implement the numerous programmes. Principals may therefore find it faster, easier and less time consuming to identify courses for teachers based on availability of courses rather than to discuss with teachers about their needs and send them to attend their desired training. Besides, Principals may not be open and ready to provide released time for staff development as releasing staff for CPD activities

also means less manpower and time for implementing the host of programmes arising from the new initiatives. Principals have to ensure that CPD activities must fit within the broader framework of the school vision otherwise CPD may become a programme competing for staff time and energy.

As for teachers, despite immense investment in terms of time and resources put into staff development, they appear to be comfortable with their day-to-day teaching and do not feel the need to gain new skills. Just as it is dangerous for schools to stagnate, it is equally dangerous for teachers to unquestioningly implement every task and to embrace every perspective that is presented to them. What is needed is the opportunity for them to develop defensible views on how CPD can meet their needs. However, opinions of the teachers had not been sought in the kinds of CPD activities and content that would meet teachers' perceived needs. Thus, rather than viewing CPD as an important vehicle for professional development and self-renewal, many teachers may see CPD activities as yet another pressure on their time. It is possible that teachers perceive their CPD as useful but time-consuming and that they hold views on how their CPD needs can be better met.

On the one hand, the problem is: If schools and teachers are struggling with a whole host of programmes, would they perceive that CPD is a help or a hindrance to the implementation of the numerous programmes? On the other hand, the issue to consider is: Is implementation of staff development too simplistic, that is, in making it 'mandatory' for teachers to acquire up to 100 hours of training, without careful thought about the aims to be achieved? What are the factors influencing teachers' participation in CPD? Do teachers perceive their own CPD as a professional need to

improve their own competence to meet the demands for standards? Or is CPD participation driven by external factors? If teachers do not have the time and motivation to attend CPD, then resources would be wasted. In the Singapore context, this seems to be the case. Day (1999) cites motivation as a major critical factor in learning. Ideally, both intrinsic motivation (the disposition to follow one's interests, acquire knowledge and become more capable) and extrinsic motivation (the confidence that learning goals are achievable and valuable) should be present. As there are factors that encourage it and factors that discourage it, these have to be constantly kept in mind. It is hence timely to review the effectiveness of the current CPD model, that is largely driven by top management, rather than from the ground, that is, arising from teachers' own needs.

Rationale for the Study

Enormous resources have been allocated to Singapore schools for CPD. However, there are gaps in our understanding and practice of effective CPD. It is particularly important to understand the factors that influence teacher participation in CPD and to work out what kinds of provision best fits their needs. The feasibility of this school-based study surfaced as a result of the researcher's observation of staff frustrations during her ten years' experience as a school leader in three primary schools.

Currently, the researcher's school has a core of young and keen teachers (15%) with less than three years of teaching experience, and experienced teachers (85%) with between three to more than forty years of teaching experience. In 1999,

all staff attended in-service courses, both school-based and organised by outside agencies, as required by the MOE. Uncertainty remains as to the extent to which staff has benefited from the training and how CPD programmes have helped them to cope with the changes in curriculum. How do individual schools internally shape self improvement as well as externally imposed changes? How receptive are the 24,574 teachers to the changes and the policies that have a direct impact on them? How motivated are they to participate in CPD activities to upgrade their competencies? What should schools do to ensure that quality programmes are in place to help teachers augment their effectiveness? Who should be responsible for teachers' CPD? What, when, where and how useful is the current training offered to individuals and to schools? Exactly what kind of support should MOE be providing?

Local research on school improvement is limited. So far, two studies (Tan, Gopinathan & Ho, 1991; 1997), have suggested that key factors in creating effective schools that produce good academic results are a caring and conducive environment, a supportive administration, regular contacts with parents and more tangible assets like good facilities. None of the studies done on school improvement, has examined what teachers' perceptions of CPD programmes are that would meet their self-identified needs for school improvement. It is hoped that this study would yield information on effective CPD from the perspective of teachers themselves as well as to find out what current factors hinder or facilitate the CPD objectives in enhancing the professional and personal competence of the teachers.

Purpose of the Study

This research was undertaken to examine key factors that influence teacher's participation in current CPD activities. The study aims to:

1 Investigate teachers' perceptions of behaviours (personal qualities) of effective teachers and the implications for CPD.

2 Gain information on key factors (internal and external) that drive teachers' participation in CPD activities.

3 Investigate the relationship between these factors and teachers' participation in CPD.

4 Examine the impact and implications of current CPD practices and recommend a framework about what effective CPD should be like, in the context of Singapore primary schools (by integrating theoretical data from literature, empirical and perceived ideas).

Significance of the Study

So far, little is known about the nature of teachers' needs, competencies, achievements and concerns amidst educational changes in Singapore. It is hoped that this study will fill this gap. This in turn will provide an increased awareness of the significance of CPD and the involvement of staff in their own CPD that could be of value in creating excellent schools in Singapore. It is hoped that a more effective model of CPD will evolve that would enable teachers to contribute to schools becoming more effective schools.

At the macro-level, the findings of this study will provide empirical data to develop a policy that meets staff needs more effectively. It can help shape the course of the TSLN movement and thus provide policymakers with the much needed help for policy formulation based on empirical information.

At the micro-level, the results of the research will become discussion areas between teachers and school administrators to improve programme development and management. Teachers are at the forefront of the implementation of school and educational policies, so their perceptions need to be carefully studied. They will have the opportunity to discuss and to make recommendations to improve CPD. Such involvement will give teachers a sense of awareness of their own personal and professional needs, creating a sense of shared responsibility and ownership of the programme to be implemented (Calabrese & Bowser, 1988; Lambert, 1989).

This study has important implications for CPD theory and practices, both in general and specifically to Singapore primary schools. First, it will contribute to the knowledge base of teacher effectiveness that is critical for effective teacher education programmes and practices.

Second, the data provides a springboard to create a non-threatening environment where teachers feel professionally esteemed rather than demeaned by allowing flexibility for teachers' individual differences and developing truly thoughtful, reflective professionals (Hjornevik, 1988).

Third, the gap between what teachers perceive and believe to be important and what is currently happening will be analysed. Schools' current programmes will be compared with the proposed model so as to identify key areas of strengths and weaknesses, their applicability in the setting of a specific primary school and to some extent, the general teaching service in Singapore.

Fourth, the findings will provide a case for further study and evaluation by the school's own personnel to be more sensitive to these needs and to provide appropriate and adequate support and training.

Finally, it is hoped that the study will break the ground for, and stimulate further work into, research in Singapore on the practice of effective CPD. Essentially, the findings are crucial in determining how teachers construe their careers and participate in training and development; and how schools can design integrated CPD programmes.

Limitations

This study has several limitations. Firstly, there is a shortage of literature on the needs of staff in the Singapore context as there has been no formal study of these. Thus the ideas and concepts relevant to the study have evolved in other countries. Secondly, the scope of the study is limited to the needs of staff of the primary schools under study. It will not attempt to identify needs of staff and factors and outcomes in schools other than the seven schools under study. It is limited to the perceptions and needs of teachers in the schools involved.

Nevertheless, the study is based on carefully collected data that reveals much about the attitudes and perceptions of the teachers involved in it. Although the wider background literature that has informed this study is drawn largely from sources outside Singapore, there is an advantage to this. It enables professionals in Singapore to view their practice from the outside and to see features of it that might have otherwise remained unobserved and tacit.

Conclusion

This chapter has sought to place the issues and questions facing the management of CPD and teacher learning for successful educational changes in Singapore. Although the directives of the government are direct and compelling, there is a need for a profound re-look at the re-education of teachers and leaders. Professional learning and development is the central factor in enhancing both school improvement and achievement. Thus, some key themes that are explored in this study are: Exactly how committed are teachers to CPD, what are teacher needs, how do teachers learn and how have CPD and teacher learning been managed to help prepare Singapore teachers to cope efficiently with the educational changes.

CHAPTER TWO

LITERATURE REVIEW

Introduction

In order to clarify the questions that any evaluation of teacher CPD in Singapore should address, this chapter reviews the wider theoretical and empirical literature. Firstly, it covers a brief overview of the concept of CPD and general ideas about CPD. Secondly, it explores the links that are claimed to exist between CPD and teacher effectiveness for school improvement, reviews current approaches and limitations of CPD practices. Thirdly, it examines key factors and their influence on teacher involvement in CPD for school improvement. Finally, it presents the research questions and discusses the theoretical framework of the study.

Concept of CPD - A Brief Overview

Terms for Staff Development

Various terms have been commonly used to describe the concept of staff development: *in-service training, in-service education, staff development, professional growth and continuing professional development (CPD).* Quite often these terms are used interchangeably, although several researchers pointed out that there are differences among them. For instance, Burke, Heideman and Heideman (1990) made a very convincing argument that in-service education is not synonymous with CPD. The difference is that in-service training and education are oriented

towards immediate training objectives, whereas CPD implies personal, professional as well as organisational needs.

Bellanca (1995) presented a systemic view and claimed that in-service is seen as only one part of CPD, being almost exclusively informational in nature. CPD, however is concerned with staff and this can mean both the needs of the individual and the school as a whole. What this implies in practice is that the term 'CPD' suggests a much wider range of activities than would otherwise be implied by the term, the 'in-service education of teachers'. In this study, however, the focus is on the needs of teachers.

General Ideas of CPD

CPD is a systematic attempt to harmonise individual's interests and wishes, and their carefully assessed requirements for furthering their careers within the requirements of schools. These activities should take place primarily on a formal and informal basis to develop the professional knowledge, skills, attitudes and performance of staff (Goertz et al, 1996). Several authors have defined CPD as a fundamental and on-going process in the everyday operation of the school and should be made up of planned activities that are practised both within and outside schools (Burke, Fesslar & Christensen, 1984; Merters & Hendrix, 1988; Oldroyd & Hall, 1991).

There is growing consensus that CPD assumes even greater importance as schools aspire to become learning organisations. This concept of a learning organisation has gained popularity in recent years as organisations recognised the

need to increase their competitive advantage, innovativeness and effectiveness in order to be more adaptable to change. Over the last decade much has been said and written on the subject, but there does not appear to be one clear definition although many do agree that the learning organisation is an ideal, a vision.

Senge (1990) attempted to define a learning organisation as one in which people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together.

In a learning organisation, systemic norms are established that communicate the idea that learning is a lifelong process for teachers and students. This personal learning is connected to organisational development (Richardson, Flanigan & Prickett, 1990). Fullan (1991) too, contends that the continuous development of all teachers is the cornerstone for meaning and reform. Professional development and school development are intrinsically linked. This means that 'teacher development depends not only on individuals, but also on teachers and administrators with whom he/she works' (p315).

Research point to CPD as a deliberate and incremental process, requiring reinforcement through continuing evaluation, review and follow-up (Cook & Campbell, 1979; Loucks-Horsley et al, 1987; Prince & Taylor, 1995). It is characterised by a total process of an individual's personal and professional growth within the framework of a school (Burke & Heideman, 1985; Stein & Wang, 1988). It

is a challenge to policy makers and school managers in Singapore to evaluate how far current strategies of CPD meet these demanding criteria.

Link Between CPD And Teacher Effectiveness For School Improvement

Literature findings over two decades strongly point out that CPD programmes do bring about change in teacher practice, and the improvement of teacher practice results in improved student performance. CPD is widely seen as an effective means to change teacher beliefs, knowledge, skills, working conditions, understandings and qualities.

It is not so clear, however, how better CPD would impact on improved school effectiveness. Current research identifies CPD as the focal point to successfully meet teachers' self-identified needs for school improvement. Guskey and Sparks (1996) found a significant relationship between staff development and improvements in student learning. Hargreaves (1994) pointed out that to improve schools, one must be prepared to invest in professional development, to improve teachers, their professional development must be set within the context of group and institutional development.

Ainscow et al (2000) stated that school improvement may be a process driven by external pressures, but it only happens when it is 'owned' by teachers themselves and is translated into practical measures that bring both new learning for individuals and changes for schools. They suggested that CPD works at three levels: the individual, the group and the school. In effective schools, these are integrated in ways

that enable enquiry, reflection, involvement, planning and evaluation (Oakes, 1989; Lezotte, 1990; Louis & Miles, 1990; Taylor & Levine, 1991; Joyce & Showers, 1995). Day (1999) pointed out that successful CPD must be a negotiated process between teachers and managers. He contended that if CPD is merely imposed to achieve targets set by the government, it will fail. It has to be based on a holistic approach and on ways that promote and take into account the informal learning of the workplace. Teacher development has to be seen in the context of lifelong learning.

All these concepts emphasised the importance of the totality of human and institutional resources in the organisation. CPD should then provide a thoughtful and guided enhancement of human talent into schools by means of a long-range working model. It was with this in mind that the notion of change that casts staff developers as organisation development specialists began to appear.

The general argument, then, is that CPD has three strands relating to the personal, professional and organisational needs. Effective CPD implies the need to be responsive to teachers' self-determined needs for teacher growth. It serves to strengthen teacher professional competence in order to raise student achievement, to help teachers develop skills needed to meet individual and organisational goals and to change their attitudes in implementing new curriculum and instructional techniques.

The main thrust is continuing CPD and the main aim is often specified as individual and school improvements. It underscores the importance of a school focus for comprehensive and collaborative efforts in improved performance, expanded

knowledge and skills leading to enhancement of student learning and school improvement.

Based on this premise, effective CPD must be closely integrated with policy review and development to enable the school and its teachers to respond to meet the rapidly changing socio-economic and technical demands of the 2000s.

Current Approaches to CPD

Traditionally, CPD was regarded as externally controlled and planned by top management for teachers, without considering the school development needs. An analysis of traditional features shows that firstly, the courses are managed externally, resulting in activities that do not meet individual needs and only school needs. Secondly, there is no long-term strategy for development and no systematic management. Thirdly, the content is more often than not fragmented and the delivery of course content is mainly lecture style. Finally, staff is encouraged to participate by extrinsic rewards such as promotion and reduction of workload.

Some ironic shortcomings of the traditional approaches to CPD are that the wide array of learning opportunities that engage students in experiencing, creating and solving real problems, using their own experiences and working with others is denied to teachers who are the learners as much as their students. For example, Morant (1981) and Hewton (1988) maintained there were four main limitations to externally managed in-service courses. First, there is often a mismatch between teachers' needs and course content. Second, teachers attending a course are often unable to apply the knowledge and skills that they have acquired in the classroom.

Third, more often than not, they lack support of school administrators and the necessary resources essential for implementing new approaches. Finally, there is often no one available at the school level to help teachers figure out how to deal with problems that may affect implementation of the new skill.

Duke (1977) too, attributed in-service failure to be the result of in-service trends which are either overly vague or parochial in scope and which make no provisions for long-term involvement of teachers in an on-going, self-improvement programme. Additionally, he considered that the use of outside consultants who rarely have any long-term involvement with the district after the in-service programme is also a factor in in-service failure.

However, from the 1980s, CPD has been gradually moving away from the external-control tradition to enter into a school-based development mode run mainly by the school. The new mode involves opportunities for teachers to take on new roles as teacher researchers (for example, providing opportunities for teachers to discuss, think about, try out and hone practices), creating new structures (for example, problem-solving groups), working on new tasks (for example, creating standards) and creating a culture of inquiry over their careers.

The reasons are that the new concepts of CPD are based on the premise that activities should be school-based, and serve the needs of the individual, the group and the school. Programmes are planned with long-term strategies and systematic management. Content is usually continuous and comprehensive and delivered in various modes such as seminars, talks, workshops, coaching, quality circles,

classroom research and evaluation. Finally, staff is self-motivated by intrinsic rewards such as professional growth and ownership (West-Burnham & O'Sullivan, 1998).

In a review of literature on the work of other researchers, the following features related to effective structures for CPD programmes appear consistently across studies (Rubin, 1984; Wu, 1987; Gilman, 1988; Day, 1999):

- Designs for CPD should be based on principles of adult learning and a full understanding of the process of change;
- Programmes should be conducted in school settings;
- Training should be conveniently scheduled to avoid interfering with on-going job requirements of participants;
- Development activities should take place at a convenient location;
- Development should take place over time;
- Trainers should have credibility with the participants;
- Participants should be involved in the planning, development and presentation of the training programme.

Generally, the literature emphasises a systematic and continuous approach to promoting long-term behavior change through staff development. The selected delivery model should include principles of andragogy for participants to learn collegially, in cooperative situations, with and from each other.

School-Focused Staff Development

Currently, school-focused staff development approaches appear to be more effective in providing meaningful professional and personal growth for teachers than most other models of in-service education. More recent thought has reshaped this notion to mean empowering staff at the school level to determine their needs. Orlich (1989) characterised school-focused in-service education eclectically as:

'programmes or activities that are based on identified needs; collaboratively planned and designed for a specific group of individuals in the school district; that have a very specific set of learning objectives and activities; and that are designed to extend, add or improve immediate job-oriented skills, competencies, or knowledge with the employer paying the cost' (p5).

Teachers must be self-motivated to actively undertake CPD for their own professional growth. A key question for Singapore thus becomes: how far are CPD policies and practices shaped and owned by those who participate in them?

Limitations of CPD Practices

Concern for the efficacy of CPD activities has led to an increased interest in reasons for the failure of traditional methods of CPD practices. The school-focused model had its limitations. In practice, although programmes could be initiated and led by the school, and school resources and premises could be made available, there was a shortage of personnel with the essential expertise and experience to conduct

effective CPD activities. The approach may also neglect or ignore individual needs while focusing on school needs.

Fullan (1982) discussed the reasons for failure as:

1 Preponderance of one-shot workshops in which teacher attendance is mandatory and topics are often not selected by teachers themselves;

2 Failure to provide follow-up for individual teachers who wish to try new strategies upon returning to the classroom;

3 In-service programmes rarely address individual needs and concerns at classroom levels besides those addressed at workshops;

4 Failure to provide support at the school level for the new skill.

To summarise, among the commonly cited reasons for CPD's ineffectiveness are teachers' lack of control of the process (Carson, 1984; Maloy & Jones, 1987); isolation of teachers, insensitivity to the needs of schools and staff and inability to link programme content to actual school situations (Alfonso & Goldsberry, 1982; Rodriguez & Johnstone, 1986; Wideen & Andrews, 1987); failure to link teacher needs to CPD content and activities; failure to provide support, feedback and long-term involvement (Leithwood & Montgomery, 1986); lack of expert help in conducting CPD and lack of sincere commitment and participation by both teachers and administrators. These are all facets of the problem that need to be considered in the present study.

Factors Influencing Effective CPD

It makes good sense for educators to identify key school factors that affect CPD efforts (Doyle & Ponder, 1977; Sparks, 1983; Fullan, 1991; Sparks, 1991; Guskey, 1995). As observed by Sparks (1983), CPD is best thought of as an interrelated process that nests goals and content within a training process, all of which occurs within a context of CPD programmes. Day (1999) proposed that there are two main sets of factors influencing quality of CPD: personal and school.

Personal Factors

Personal Qualities

There is an extensive and longstanding body of research that focuses on 'good teacher' personal qualities, skills and knowledge of the teachers, and effective teacher behaviours. Day (1999) has summarised this work and identified a range of 'good teacher' personal qualities and behaviours that are necessary for teaching effectiveness.

Table 1 shows a comparison of 'good teacher personal qualities' recognised in recent research. Common characteristics appear to include having knowledge of subject matter, being knowledgeable in related subjects, being adaptable, kind and considerate (patient), firm but fair, committed, enthusiastic, cherishing their own individuality, recognising individual differences, being able to maintain discipline and order, developing an inquiring mind (being creative), having humility, good

communication skills, a sense of humour, showing courage and integrity and to be available.

Table 1: Comparison of Good Teacher' Personal Qualities

Stern (1963)	Combs (1965)	Hare (1993)	Jackson, Boostrom and Hansen (1993)	Rudduck, Day and Wallace (1997)	Day (1999)
Knowledge of subject matter	Knowledgeable (Subject Matter)		Knowledgeable yet respectful		Sound knowledge of subject
	Knowledgeable (Related Subjects)				
Willingness to be flexible	Adaptable	Open-minded			
Supportive and appreciative attitude	Understands process of becoming (Patient)	Empathetic	Kind and considerate	Easy to talk to Doesn't go on about things Doesn't give up on students	Helpful and encouraging Lets students talk to them
		Impartial	Free of prejudice/ Fair	Fair	Firm but fair
	Sense of humour		Able to smile and appear cheerful	Sense of humour	Sense of humour, cheerful, good temper
	Disciplined		Able to maintain discipline and order		
	Enthusiastic	Enthusiastic	Optimistic and enthusiastic	Enjoys teaching students and subjects	Enthusiastic
Willingness to experiment	Develop an inquiring mind (Creative)	Imaginative			
	Humble	Humble			
Provision of study aids and well-established examination procedures	Committed			Makes lessons interesting	Interested
Ability to personalise teaching	Cherishes own individuality				
Ability to perceive from students' point of view	Recognises individual differences	Having good judgment	Responsive to individual students' needs		
Ability to use a conversational manner in teaching Skill in questioning	Good communication skills			Doesn't shout Explains things	Doesn't shout Able to explain difficult point
		Courage, Integrity			
	Availability				

These qualities identified are often, however, those of the individual, reflecting differences in attitude and personality. It is difficult to know which of them can be altered through training and development. Yet, these qualities are essential to good teaching.

Needs (or Skills) of Effective Teachers

It is increasingly being recognised that changes in teacher behaviour are a necessary pre-requisite for a successful academic environment. Furthermore, these teacher actions are qualities that are readily amenable to reinforcement, alteration, and remediation through CPD.

The literature research shows that effective teachers are effective managers who utilise direct instruction to 'relate positively to student achievement in every process-product study conducted to date' (Good, 1979, p54). They craft quality decisions on planning and organising instruction, decisions and behaviours related to the delivery of instruction. While occupying the centre of attention, effective teachers are strong, efficient instructional leaders who maintain a strong academic emphasis by maximising academic learning time, and provide for higher rates of engaged time on academic skills, with resulting implications for student achievement (Duffy, 1981).

Life Cycle

Many researchers have emphasized the importance of personal and professional biography and needs in understanding teachers and their teaching, and as a basis for furthering their CPD. They have argued that the exploration of personal

and professional life histories can act as a window through which teachers can reflect upon or give 'voice' to their experiences (Lakoff & Johnston, 1980; Clandinin & Connelly, 1984b; Clandinn 1986; Elbaz, 1990).

A review of literature shows that there is a teacher life cycle. Researchers (Butler, 1963; Levinson et al, 1978; Sikes, 1985, cited in Ball & Goodson, 1985) have proposed that that there are five phases in teachers' lives in which they share like experiences, perceptions, beliefs, satisfactions, frustrations and concerns, and motivation. For instance, in Phase 1, teachers who are between 21 to 28 years old are in the 'Entering the Adult World Phase' and face major tasks that require them to become more responsible, to create a stable structure and to explore the possibilities of adult life. Learning how to interact and communicate the subject to various groups of pupils together with discipline seems to be the most intimidating aspects of the job.

Compared to Phase 1, teachers in Phase 2 (Age Thirty Transition Phase), who are between 28 to 33 years old, are stabilising. During this phase, gender differences are apparent. Female teachers find this phase stressful, as after thirty, they have to decide whether to have children, to seek promotions or even explore alternatives to teaching. Male teachers either gravitate towards cliques of deviants (who are anti-the-school and who have a negative orientation to work) or become the opposite, that is, cabal members. Promotions and money become significant as the wish for greater responsibility is representative of growing up and as domestic and familial commitments increase.

Teachers in Phase 3 (Settling Down Phase) are between 30 to 40 years old. Female teachers who have chosen to make their occupation secondary to their career as a wife and mother may become more understanding and sympathetic towards school and pupils. Male teachers on the other hand, work at developing their competence and strive to advance their careers to headship.

In Phase 4 (Transition From Youth to Maturity Phase), teachers who are between 40-50/55 are either successful or unsuccessful. If successful, they are teachers in senior management positions. If unsuccessful, they are very unlikely to be promoted. Those who find it difficult to accept and come to terms with their age and position may coast, stagnate and become bitter and cynical or generate.

In the last phase, Phase 5 (Preparing for Retirement Phase), both male and female teachers who are in the 50 to 55 plus age range, become freer in their attitude and discipline. This is because they have authority as their experience makes them realise that children's learning is the most important thing. Retirement too becomes an increasingly attractive prospect.

Thus, teachers of a similar age and sex share like experiences, perceptions, beliefs, satisfactions, frustrations and concerns, and the nature of their motivation and commitment alters in a predictable pattern, as they get older. This means that those who plan teacher CPD must be aware of the different biological, psychological, and environmental phases of teachers and how to motivate teachers to commit themselves to CPD and to achieve job satisfaction and effectiveness. Whether or not current arrangements for teacher CPD in Singapore are designed to acknowledge different

needs at different points in the life cycle of teachers or those of different stages of their careers needs to be assessed.

Career Stages

Teachers have different experiences at different stages. An analysis of research (Super, 1957; Schlechty & Whitford, 1983; Sikes, 1985, cited in Ball & Goodson, 1985; Huberman, 1985, cited in Kremer-Hayon, Vonk & Fesslar, 1993; Burden, 1986; Huberman, 1988; Little, 1989; Leithwood, 1992) suggests the existence of a dimension known as 'career-cycle development' that acknowledges that there are six stages in a teacher's career. At different stages of their careers, teachers will have different types of teaching experiences.

For instance, new teachers (from 1 to 3 years of classroom experience) are at Stage 1 (Career Entry Stage) in which researchers (Schlechty & Whitford, 1983), believe that they are experiencing survival, discovery and 'reality shock' in coming to grips with problems of disciplining and motivating students (p1). This is confirmed by others (Ryan, 1987; Cooke & Pang, 1991; Cole, 1997) who found that beginning teachers require help with numerous problems and needs.

Compared to teachers at Stage 1, teachers in the second career-cycle, (Stabilisation Stage) with between 4 to 10 years of classroom experience, have acquired mastery of a basic repertoire of instructional techniques. They are more confident and are able to select appropriate methods and materials in the light of student abilities and interests.

Teachers in Stage 3, with 11 to 20 years of classroom experience, have substantial experience. This is a period of 'life review' and 'stock take' (Butler, 1963, cited in Kremer-Hayon, Vonk & Fesslar, 1985, p104). There are three categories of teachers at this stage (Huberman, 1988): one that seek out novel practices and often look outside their own classrooms for professional stimulation, a second group that focus their efforts on seeking promotion to administrative roles and finally a third group that reduce their professional commitments. Age-grading plays out, especially for men, in the progress from classroom teacher to administrator (Nias, 1985; Sikes, 1985; Prick, 1986).

At Stage 4 (Reaching a Professional Plateau Stage), teachers with 21 to 30 years of classroom experience, are internalising their successes in all facets of their lives. Responses at this stage appear to be of two sorts: serenity, that is, stop striving for promotion and simply enjoy teaching and a renewed commitment to school improvement; or conservatism, that is, become bitter, cynical and stagnate.

In the final stages, Stage 5 and 6, (Retiring Stage), teachers who have 31 to 40 years and more of classroom experience, prepare for retirement or behave in three different ways: engage in 'positive focusing' in an area of interest, engage in 'defensive focusing' (Huberman, 1988, cited in Leithwood, 1990, p93) or exhibit a less optimistic and generous attitude toward their past experiences and become disengaged - become tired and may be a source of frustration for younger staff.

Hence, teachers at different stages of their careers will share similar experiences and teaching competences. During all these stages, teachers can be

encouraged to reflect upon and share their understanding of their work at different times in their professional lives. Furthermore, schools must provide CPD that serves 'establishing', 'enhancement' and 'maintenance' functions (Schlechty & Whitford, 1983, p58) in which both the needs of individuals and schools are balanced to foster a CPD partnership for mutual benefit This means that those who plan teacher CPD must be aware of the different life cycles and stages of teachers' careers and of the ways teachers can be encouraged to reflect upon and share their understanding of their work at these different times in their professional lives. How far this is done in Singapore's schools is an issue to be explored.

Day (1999) too, proposed that a connection might be made between teachers' life cycles and career stages and their perceived learning needs. The question is: What are the different needs and experiences of male and female Singapore teachers at different phases (life cycles) and at different stages of their careers? And how might all these be related to their participation in CPD?

School Factors

The further professional development of teachers is embedded in a matrix of influences covering the cultural values in the school, the school resources, the procedures, the opportunities that exist for teachers to grow professionally as experiential, self-directed or collaborative learners, the different degrees to which different teachers are either capable of or encouraged by school personnel to engage in reflective practice. Schools vary significantly in the kinds of environment they nurture for such kinds of learning to take place. While the literature on such learning

has established its importance (Kolb, 1984; Day, 1999), it is not so clear in the case of Singaporean schools, how such learning takes place. It is an aim of this research, therefore, to discover from teachers the extent to which they rely on schools' structures and CPD processes to motivate them to participate in CPD.

Culture

Culture is concerned with the beliefs, values and norms that are shared among members of the school community to bring about changes in teacher behaviour. It has been claimed by London (1985), that a high level of shared understanding about aims and objectives among a staff team is a significant factor in the development of the effective school. The organisational structure that serves to support CPD activities or Fielding & Schalock (1985) and the context can be viewed as consisting of three broad dimensions: technical (procedures and school resources), interpersonal (role of school personnel), and cultural (role of Principals).

- Technical Dimension

The technical dimension comprises procedures and resources that help staff to succeed in learning and practising new skills. This also involves placing CPD as close to the actual site of teaching as possible, that is activities should preferably be held at the school of participants (Swenson, 1981; Wood, McQuarrie & Thompson, 1982; Korinek, Schmid & McAdams, 1985; Wu, 1987). Generally teachers prefer training that is on-going, well structured and conducted at appropriate points in time (Sparks & Loucks-Horsley, 1989; Pasch & Harberts, 1992; Dechant, Marsick & Kasl, 1993).

➢ Interpersonal Dimension

The interpersonal dimension concerns patterns of communication, support and co-operation among staff members. Joyce and Showers (1988) described such an environment as including school personnel (school leaders and colleagues) to offer support, released time for people to devote to learning endeavours and the necessary materials for effective learning. Supportive contexts are typically characterised by collegiality, experimentation and a willingness to allow for school planning and implementation. It is vital for CPD to be conducted in a supportive climate of trust, peer support and open communication and for CPD to be seen not simply as training sessions, but also as shared experiences that modify the existing culture of a school. These activities have an advantage because they bring the same group of adults together over an extended period (Levine, 1985).

➢ Cultural Dimension

The support of Principals' commitment to CPD is well documented. The review of literature ascribed effective CPD programmes to strong educational leadership (Crandall, 1982; Fullan, 1982; Leithwood & Montgomery, 1982; Goodlad, 1984; Goldring & Rollis, 1993). There is a call for active leadership to shape schools as true learning communities. Indeed, Principals play a key role in establishing a supportive climate and in shaping schools as true learning communities that support experimentation and value efforts.

Active Principals craft a culture that reflects cohesion and a shared vision in continuous CPD to develop schools as learning organizations. The main intentions are to promote individual teacher's personal mastery and organisational self-efficacy

to acquire new skills, to challenge teachers' mental models to see themselves as rational decision-makers and to engage in self-analysis, experimentation and reflection. They develop team learning by setting up collaborative study groups and demonstrating a caring sense of community. They engage teachers in systems thinking by continuously supervising and assessing the educational climate of the school, by providing feedback to staff about possible areas for study and improvement, by celebrating successes as a team and by modelling high standards of professional behaviour and commitment to continued growth. Moreover, they may also support teachers to find appropriate resources and structure time for teachers to talk about their teaching and innovations.

The key issues to consider are: How helpful have people, school resources, leaders, and specifically Principals been, in supporting and motivating teachers in their CPD? What kinds of gaps are there and how can these be dealt with?

CPD Factors

Types of CPD Activities

Some researchers (Simmons & Sparks, 1985; Simmon & Schuette, 1988) suggested that teachers' learning should include activities that provide a theoretical (knowledge) base that undergirds a recommended teaching strategy. Such kinds of academic learning facilitate teachers' academic development through conceptual understandings, skills development and subsequent transfer of skills (Joyce & Showers, 1982; Showers, 1984; Sparks, 1985).

Others who were developmental theorists (Paulston, 1972; Ward & Dettoni, 1974; LaBelle, 1975; Freire, 1985; Moore, 1988) proposed that CPD should include job-related activities that promote teachers' professional development to enable teachers to apply skills taught from research and best practices. Such kinds of learning are practical, realistic, important and relevant to teachers' job-related needs.

- Academic Development Activities

a) Formal Activities

In schools, teachers have to attend formal, compulsory activities (core modules) that are planned and financially supported. The main objective is to provide activities that directly correlate with school instructional and curricular objectives, with generally anticipated outcomes. Teachers may leave such training, feeling empty or cheated. The reasons are that they have not been given time to participate in their own learning, nor opportunities to share their needs, to discuss their experiences in the light of the topic or even to feel appreciated for having attended training.

b) Informal Activities

Informal Activities are non-threatening and non-judgemental, perhaps even relaxing. The main objective is to foster a community spirit through the process of informal activities. Apparently, the most effective CPD activities are those that demand long-term commitment within the context of a learning organization. It is therefore important to provide maximum opportunities for teachers to proceed in an orderly way from orientation to in-depth exposure to integrated practice and for those planning CPD to build on the experiences of participants by fostering cumulative formal and informal learning (Pitner, 1987; Fairweather & Rhoads, 1995).

➢ Professional Development Activities

a) Self-Directed Activities

In self-directed learning, the learner has a high degree of control (Mocker & Spear, 1982). Self-directed learning that is well-supported and recognised in schools, has great potential to promote teacher growth and school improvement.

b) Nonformal Activities

Nonformal Activities are autonomous activities that may take place outside the formal school setting and may be structured at teachers' level of development. Researchers have looked at the principles of andragogy that view teachers as adult learners. A general point to emerge from this tradition of writing is that teachers can be encouraged to become adult learners. As adult learners, they require learning that is self-paced, self-directed and relevant to their jobs or career interests through experiential, reflective and collaborative learning.

In experiential learning, teachers learn to integrate their professional experience with research-based or academic knowledge. Kolb (1984) emphasised a cyclical relationship among four modes of a learning process that promotes experiential learning: concrete experience, reflective observation, abstract conceptualisation and active experimentation. Brookfield (1986) reported that experiential learning occurs when skills and knowledge can be applied immediately in relevant situations, such as experimenting with new approaches and innovations to improve teaching, and presenting such innovations at workshops and conferences.

Reflective learning, on the other hand, enables teachers to teach in a 'deliberate and intentional fashion' rather than in a 'blind and impulsive' manner (p17). In reflective learning, teachers are required to reflect continuously on their teaching methodologies, seek new knowledge and constantly find better ways of guiding students in their learning.

In schools, teachers are required to participate in collaborative activities to interact with students, parents and the community in order to build an in-built interlocking relationship among the people concerned with their students' welfare.

To bring together these significant influences, teachers must work with their colleagues in collaborative activities, for example, attend meetings, parent support groups, workshops and conferences, so as to provide a conducive environment for the nurturing of the child (Bellanca, 1995). For teachers who do not wish to participate in group activities, an alternate activity is the use of a learning contract.

All these kinds of learning are major forms of adult education and major forms of learning on the job. They provide a broad base of activities for teachers who are creative, imaginative and energetic (Myers & Jones, 1993).

Summary

A key conclusion emerging from this discussion is that for CPD to be effective, there should be a range of activities for both the academic and professional

development of teachers so that teachers can grow professionally as adult learners. Teachers should have opportunities for active participation in learning that is needs related, with immediate applicability of training to the classroom, and on-going and continuous programme evaluation.

Apparently, salary increases, stipends or other extrinsic means of reward, which are supported in traditional approaches to CPD, have not always proven to be effective incentives (Wood & Thompson, 1980; Sparks, 1985; Wu, 1987). Rather, in the new and more successful modes of CPD, it is when the learning environment is made favourable, that teachers are intrinsically and more successfully motivated. It is also when teachers' learning is job-related, when their needs are considered, when CPD is planned with long-term strategies, when the organisational structure serves to support CPD by providing opportunities for released time for CPD, and when Principals and school personnel are actively involved, that teachers gain personal satisfaction and interest. Besides, when teachers share their expertise and experience, 'affiliation' becomes a strong incentive for participation (Caldwell, 1986, cited in Duttweiler, 1988, p4).

The question becomes: How far do policy makers and Principals understand and support these principles? How favourable is the learning environment? How actively involved are teachers as adult learners and growing as self-directed, experiential, reflective and collaborative learners? Are teachers intrinsically or extrinsically motivated? Do teachers in Singapore feel that their professional development is related, with immediate applicability to the classroom and being

managed in the light of such problems or do they experience it in a very different way?

Current CPD Models

Categories

Current models of teacher CPD in Singapore tend to fall into two categories: those having a personal change bias or an organisational goals bias.

- Personal Change Bias

Models with personal change bias are based on the assumption that better teachers will make better schools. Some of these models emphasise upgrading individual skills and knowledge or attitudes assumed to be needed by teachers in the school. The needs selected for treatment may be those perceived by leaders for change or by the teacher himself or herself. An example of such a model is microteaching. Another set of models with a personal change bias focus upon changing the behaviour of the individual and groups through clarification and reconstruction of their values and interpersonal behaviour.

- Organisation Goals Bias

Models with an organisation goal bias emphasise developing the skills teachers need to carry out organisational goals determined by the school board or central office staff. Examples of such models are: Needs-Assessment Competency-Based Teacher Education (CBTE) designs and specific programme training that helps teachers use new textbooks or programmes that attempt to create change in response to a national priority.

Both the two approaches to CPD have their weaknesses. Their weaknesses essentially are over commitment to the assumptions that underlie the approach, and the neglect of assumptions underlying the other approach.

One model that appears to be able to harmonize personal and organisational change is that of a teacher-centered approach that brings teachers together to work on curriculum development and other school-related problems and concerns, and provides in-service training in line with local needs and interests felt by teachers. While overcoming the one-sidedness of the models described above, the teacher-centered approach is often unsuccessful for another reason: it does not always provide for political contingencies.

Literature points to the centrality of teachers in the process of CPD. This suggests that for CPD to be effective, staff developers must realise that individual change is accompanied by change in school culture and that individual improvement leads to improved school performance and vice versa. It makes sense then to focus on a systematic delivery of instruction based on adult learning principles that emphasise the nature of adult learners (Mizruchi, 1983; Schon, 1983; Senge, 1990; Glickman, Allen & Lunsford, 1994).

School-focused staff development is a developmental process rather than an event. Successful CPD practices are characterised by important personal and school factors: these cover planning, shared perceptions of the purpose of CPD and effective mechanisms to ensure it happens.

The most important ingredients then, are the notions of learning to enable teachers to reach the degree of professionalism represented by teachers who are experiential, reflective, collaborative and self-directed (Mizruchi, 1983; Schon, 1983; Senge, 1990; Glickman, Allen & Lunsford, 1994). Do present arrangements in Singapore match these circumstances? It is a key aim of this research to answer this question.

Research Questions

The study aims to answer the following research questions:

Personal Factors

1. Are there differences in teachers' perceptions of personal needs (or skills), and how if at all, do they vary according to age, gender and years of teaching experience?
2. Is there a relationship between personal factors (needs or skills) and teachers' participation in CPD activities?

School Factors

3. Are there differences in teachers' perceptions of the Role of Principals, Leaders, Colleagues and School Resources, and how if at all, do they vary according to age, gender and years of teaching experience?
4. Is there a relationship between school factors (Role of Principals, Leaders, Colleagues and School Resources) and teachers' participation in CPD activities (Formal, Informal, Nonformal, Self-Directed)?

CPD Factors

5. Are there differences in teachers' perceptions of CPD activities (Formal, Informal, Nonformal, Self-Directed), and how if at all, do they vary according

to age, gender and years of teaching experience?

6. Is there a relationship between CPD activities (Formal, Informal, Nonformal, Self-Directed) and teachers' participation in these activities?

Qualities of Effective Teachers

7. What are perceived personal qualities of effective teachers that will help them to cope effectively with educational changes?

Components of an Integrated Programme

8. What do teachers perceive as important components of an integrated CPD programme that best meet the changing needs of Singapore teachers?

A Conceptual Model

This study examines the relationship between internal and external motivational factors and teachers' participation in CPD. Figure 1 illustrates the conceptual model that was developed based on the literature research and on the researcher's reflections of the practical implications that have shaped the approach of the study. The model posits that the relationship among the external and internal factors and teachers' participation in CPD activities is complex and multi-dimensional, as portrayed by linkages between three key factors. The model is adapted from models proposed by Guskey and Sparks (1996) and Day (1999). It posits that teachers' involvement in CPD is influenced by three major factors: personal, school and CPD factors (For Definition of Terms, see Appendix A).

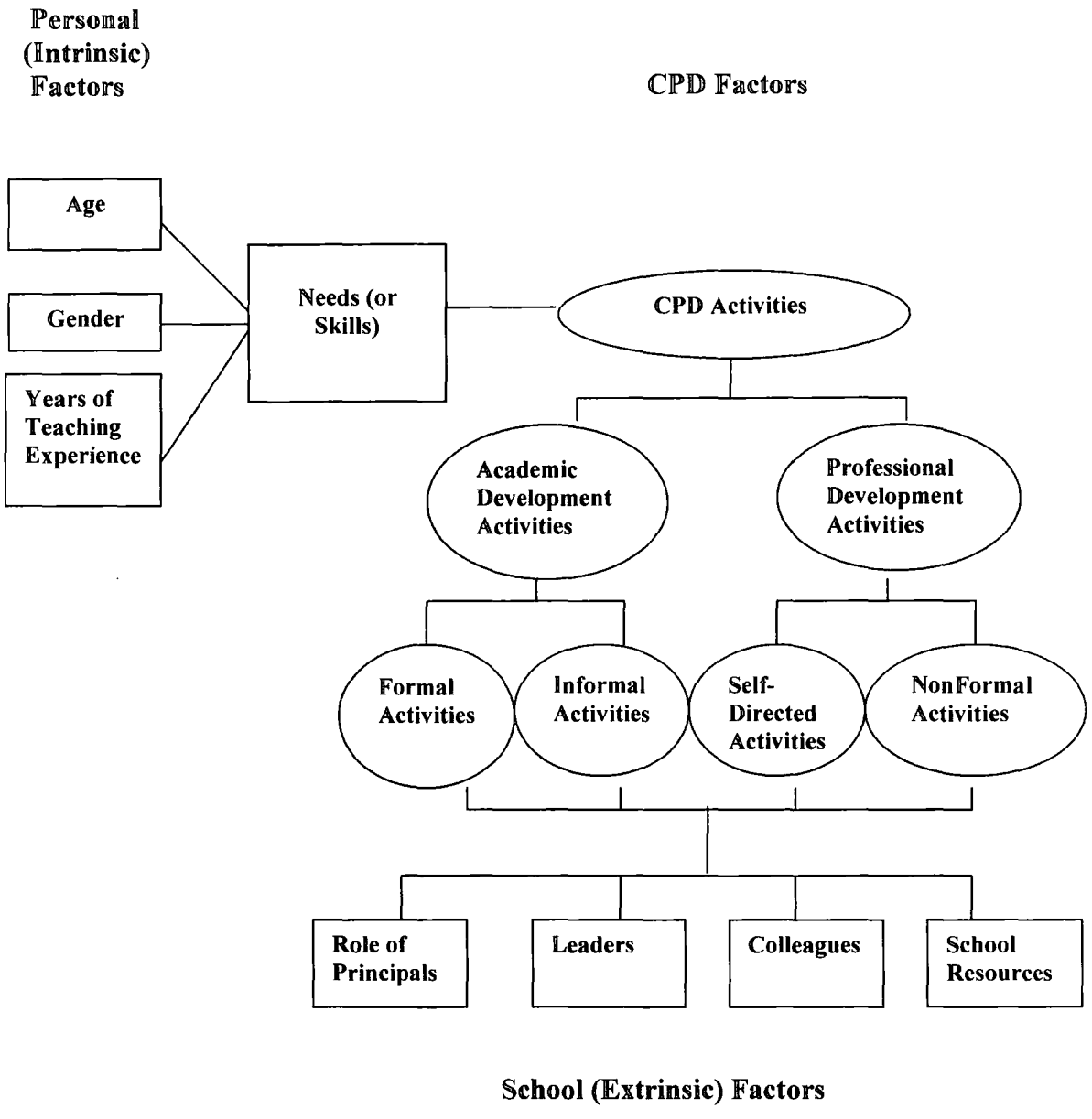

Figure 1: A Model Showing Factors Influencing Teacher Participation in CPD Activities (Adapted from Eraut, 1987; Dallelew & Martinez, 1988; Guskey & Sparks, 1996; Day, 1999)

The conceptual model is a competency model based on current paradigms for staff development (Eraut, 1987; Dallelew & Martinez, 1988; Guskey & Sparks, 1996; Day, 1999). It embraces the 'what' of staff development, that is, a deeper understanding of specific academic disciplines and particular pedagogical processes and new knowledge, skills and needs that are required for teacher effectiveness.

In this model, personal factors refer to the personal needs (or skills) of individual teachers; their life cycle (age, gender) and career stages (years of teaching experience). Different teachers have different needs and different life experiences that shape their views and attitudes to teaching and the way they undertake CPD for personal and professional development (Goodson, 1992; Day, 1999). Past research has demonstrated a strong link between teachers' life and career stages and their training needs, leading to school improvements. It may be argued that as our knowledge base in education expands, teachers need new types of expertise and that male and female teachers have different developmental phases according to their age and years of teaching experience.

External school factors are also crucial to the success of CPD programmes. School factors or 'context characteristics' include the organisation, system, or culture in which staff development takes place, where the new understandings will be implemented and how most content and processes are adapted at least in part to the unique characteristics of the setting (Deal & Peterson, 1993; Hargreaves & Hopkins, 1993; Huberman & Miles, 1984; Fullan, 1985; Firestone & Corbett, 1987). Staff development efforts succeed to the degree that they can adapt to and capitalise on this variability (Guskey, 1995). That is, they must be shaped and integrated in ways that

best suit regional, organisational, and individual contexts: the local values, norms policies, structures, resources and procedures (McLaughlin 1990; Talbert & Laughlin, 1994).

Day (1999) has argued that the daily experience of teaching and the norms and conditions of the school as a workplace are critical factors that affect both the level of effort which teachers are prepared to invest in learning and the goals towards which that effort is directed. Key among the school factors is the involvement of the Principal and his/her support of people in CPD activities. There is overwhelming consensus that school improvement and staff development is a direct function of leadership. Almost every model of improvement, effectiveness, change and quality has, at its heart, the existence of leadership (West-Burnham & O'Sullivan, 1998). Teachers' learning too can be best facilitated and supported by other leaders and colleagues in schools in providing a positive learning climate in schools and in maintaining a programme of change that continues to meet the needs of their pupils. The availability of school resources also serves as a powerful tool to enhance teacher development.

In addition, past research has demonstrated that the nature of teacher CPD activities is important to teacher participation. Extensive literature on andragogy suggests that teachers are adult learners with certain traits and that they require certain conditions to learn effectively. According to researchers (Mocker & Spear, 1982; Peters & Waterman, 1982; Dalellew & Martinez, 1988; Fullan & Hargreaves, 1991), the learning environment is critical to teachers' learning. They categorised these learning environments as formal, nonformal, informal and self-directed

activities, that serve to enhance teachers as collaborative, experiential, reflective and self-directed learners. Research on teacher CPD suggests that these variables include the types and forms of staff development activities (Sparks & Loucks-Horsely, 1989), the way those activities are planned, organised and carried out and followed-up. Examples include the quality of training and the value of sustained follow-up activities such as coaching, action research, or focused study groups (Loucks-Horsely et al, 1987; Tumposky, 1987; Yatum, 1987; Merters & Hendrix, 1988; Oakes, 1989; Louis & Miles, 1990: Joyce & Showers, 1995). The underlying proposition is that effective CPD requires effective methods for promoting it.

In summary, personal, school and CPD characteristics are all important in determining the effectiveness of CPD. These three dimensions also form the conceptual framework of the recently developed Standards for Staff Development (National Staff Development Council, 1994, 1995a, 1995b). As Day (1999) has emphasised, all these factors interact and become decisive for the ways in which teachers continue to learn their job. Factors such as the role of the individual learner, the organisational culture, colleagues and leadership contribute to the quality of professional learning and development.

The conceptual model adapted and proposed in this study therefore highlights the merits of the models proposed by Eraut (1987), Dallelew and Martinez (1988), Guskey and Sparks (1996) and Day (1999). It captures major critical factors recommended by literature for this study to be conducted to gain an understanding of how these factors are related to influence CPD in Singapore schools and to develop a plausible model for effective CPD in the future.

Conclusion

The literature has been selected firstly, to show that effective CPD serves as a vehicle for teacher effectiveness for school improvement. A summary of studies on the purposes and functions of CPD helped to show the link between CPD and teacher and school improvement and key factors related to effective CPD outcomes. The key point that stands out in literature is that for successful change to take place, appropriate CPD is crucial.

It is clear that CPD needs to change throughout a teaching career (Day, 1999). In any given school, there will be male and female staff with different personal needs and who are at different phases and stages of their careers. Teachers too, will possess different personal qualities and experiences that are crucial for teaching effectiveness. If collaborative, supportive professional learning is to take place among them, these differences must be acknowledged and used to the best advantage of the school. How far these differences are acknowledged in current CPD programmes in Singapore is also not clear.

Secondly, school factors such as culture and leadership are clearly important factors to consider in shaping effective CPD. Day (1999) too, notes that leadership in particular, that nurtures trust and empowers teachers to learn is more effective than styles not built on these assumptions. These broad propositions are supported by many other writers. What is not so clear, however, is what can be done to facilitate change in culture and styles of leadership.

CPD factors were also discussed. Mizruchi (1983) and Senge (1990) proposed that the most effective CPD activities are those in which teachers have maximum opportunities for involvement for self-directed, reflective, experiential and collaborative learning together with various kinds of CPD activities, within the context of a learning organisation. Exactly how teachers are involved in CPD for successful school change in Singapore schools, whether they are benefiting, how CPD is put in practice in Singapore and whether CPD is effective, are all not very clear.

Teachers are lifelong adult learners that learn in different ways and have different learning styles. A great deal of work emphasises the importance of understanding the past experience of teachers in formulating their CPD plans. Crucial to this is the need to understand what motivates teachers, what kinds of CPD activities do teachers prefer, how this is related to their interests and participation in CPD to address the challenges of educational change and how they construct their own narrative understanding of that experience, as all these shape their views on their future CPD needs. That understanding is complex, emotionally charged and bound up with how teachers see themselves as individuals. It is critical therefore, to probe more deeply into the ways in which teachers learn as adults, how they interpret their previous experiences of CPD and the various types of CPD activities that will help them to grow professionally. In Singapore, it is not clear how this is done. In short, the critical challenge is to understand how these factors play against or with one another in the particular setting of individual schools.

Lastly, critical to this discourse is how far CPD is understood by key participants and how far Singapore schools themselves have the freedom to develop CPD activities along these lines. The first is a question of the models of CPD in the minds of leaders in schools, the second concerns the micro-politics of educational policy and practice. Both sets of issues need to be understood better if the current models of CPD have any chance of being applied and developed successfully. Many studies have found that CPD models that harmonise individual and organisational needs are most effective. What is not so clear is the form and factors that determine the form CPD should take in the Singapore context. This review is significant as it raises key issues defined in the conceptual model and the research questions that the researcher wishes to address for effective CPD in the Singapore context.

CHAPTER THREE

THE RESEARCH METHODOLOGY

Introduction

This chapter comprises four sections. The first section sets out some broad methodological considerations relevant to a study of this type. The second section provides the rationale for choosing the particular sample and a description of the sample. The third section describes the research instruments used. The final section describes the research procedures in terms of different methods to collect data and the methods of statistical analyses employed.

Section One: Broad Methodological Considerations

Some studies on CPD have been conducted using longitudinal methods based on observations over a period of time (Huberman & Miles, 1984; Driscoll & Stevens, 1985; Orlich, 1986; Krupp, 1989; Rosenholtz, 1989; Stallings, 1989; Fullan & Hargreaves, 1992; Aitken & Mildon, 1992; Leithwood, 1992). The advantage of such a method is that much could be learned about the phenomenon under investigation, in particular about teachers' perceptions of change in their professional skills. However, one obvious limitation for this kind of study is that they need too much time to conduct, and during this long period of time, a lot of other factors may come into play and change the relationships under observation. More importantly, the thinking initiatives in Singapore and the strong impetus for CPD activities from the

MOE are a relatively recent phenomenon. Hence, it may be premature to carry out a longitudinal study on Singapore CPD programmes at this juncture.

The other research method is the cross-sectional method that involves selecting organisations in different contexts, investigating the relationships between factors within these organizations and checking to see whether there is any correlation between the variables. The review of literature revealed that most studies (Duke & Gates, 1990; Huling-Austin, 1990; Cooke & Pang, 1991) have been carried out as cross-sectional studies by using a variety of research methods including survey questionnaires, group discussions, interviews and content analysis of documents. Some studies employed more than one method (Hirschman, 1986; Brownell & Trotman, 1988; Bennet, Glatter & Levacic, 1994).

Since this study was to investigate and determine different variables related to teachers' CPD, a decision was made to use different methods to collect data. The questionnaire survey was adopted as the primary method for obtaining data. However, the researcher considered that sole reliance on the use of a survey approach might not be adequate for several reasons. First, the survey questionnaire would limit the possible responses because of the formulation of pre-set questions. Pre-structuring the investigation would also run the risk of concentrating on those aspects of CPD that would prove easy to measure, with the attendant consequence that those issues which are valuable would not surface and render the study inadequate.

In fact, in the past two decades, the qualitative research paradigm has become increasingly recognised as a valuable approach to the study of schools, teaching and

school improvement. Moser and Kalton (1971) described the interview as 'a conversation between interviewer and respondent with the purpose of eliciting certain information from the respondent' (p271). A major virtue of qualitative research is its ability to capture people's conception, meanings and interpretations of what occurs around them. More expansive and in-depth replies are normally obtained through interviews when the respondent is encouraged to reflect upon his work (Hewton, 1988, p57). The advantage of using interviews and open-response questions was pointed out by Best (1970) in that perceptions can be gauged through an analysis used by teachers and Principals during interviews such as administrator-centred language, subject-centred language and child-centred language.

As a distinctive research technique, the interview method served three purposes. First, it could be used in conjunction with the questionnaire to clarify the questionnaire findings regarding how the needs of teachers could be met, and to follow up on unexpected results. Second, it could provide direct access to what a person knows (knowledge or information), what a person likes or dislikes - values and preferences, and what a person thinks - attitudes and beliefs (Tuckman, 1978). Third, the interview could provide an opportunity for probing through direct verbal interaction between the researcher and individuals in 'a two-person conversation initiated by the interviewer for the specific purpose of obtaining research-relevant information and focused by the interviewer on content specified by research objectives of systematic description, prediction, or explanation' (Cannell & Kahn, 1968, cited in Cohen & Manion, 1980, p271).

Thus although interviews take much more time to be conducted, it was decided that there would be two preliminary discussions with a group of eight teachers before the survey. The objective of the first preliminary discussions was to collect and confirm data regarding teachers' ideas on CPD so as to formulate the research questions. The second preliminary discussion was conducted to confirm the survey questions.

To complement the questionnaire survey, it was decided that post-survey interviews were to be conducted to further to gain an in-depth analysis of data about how teachers construe CPD in their schools within the Singapore context, to clarify and expand on findings, and to qualify any generalisation that might be made in the survey.

A trend analysis of teachers' responses using different techniques for conducting surveys, such as in-person versus video interviews and different ways of asking questions were also considered. Hence, case vignettes were prepared to enable the researcher to illustrate the characteristics of teachers at different life cycles and career stages.

These methods provided an economical and reliable approach to learn about the expectations and experiences of professional development among Singaporean teachers. They are a group with experience in responding to questionnaires. Professional development is an important element of their current professional practice and little is known in detail about what individual teachers think about the CPD options open to them. While the study draws on macro-level documents about

policies in this field and data about particular schools, it is essential also to find a way at the micro-level to explore the views of teachers. The research instruments chosen enabled this to happen.

Section Two: The Sample

Sampling of Survey

A stratified random sampling method was used for selecting different primary schools in Singapore. Seven primary schools were selected from different school types, namely government-aided, Specially Assisted Primary (SAP), mixed, all-boys and all-girls schools. To ensure a higher external validity, the seven schools were randomly selected to obtain a broader representation of the different types of primary schools in Singapore and a wider representation of English-medium teachers.

Table 2 gives the distribution of the sample by schools. An attempt was made to ensure that the sample provided a fair representation of primary schools in Singapore so that the results obtained in the study could be generalized to the teacher population.

Table 2: Distribution of Sample by Types of School (n=310)

School Type	Total No Of Schools	No Of Schools Surveyed	%age Of Schools Surveyed	No Of Teachers Surveyed	Total No Of School Teachers	%age Of Teachers Surveyed
Government (Mixed)	*155	3	1.9%	108	*9007	1.2%
Sub-Total	*155	3	1.9%	108	*9007	1.2%
All Boys	*7	1	14.3%	30		
All Girls	*13	1	7.7%	95		
SAP	*15	1	6.7%	37	*3275	6.2%
Government-aided (Mixed)	*11	1	9.1%	40		
Sub-Total	*46	4	8.7%	202	*3275	6.2%
Total	*201	7	3.5%	310	*12282	2.5%

** Education Statistics Digest, 2000, MOE, Singapore*

These selected schools provided a fair representation of primary schools in Singapore so that the results obtained in the study could be quite confidently generalized to the entire primary school population. They comprised three mixed government primary schools (1.9%), one mixed government-aided (9.1%), one all-boys school (14.3%), one all-girls schools (7.7%) and one SAP school (6.7%) were selected. There was one weakness in the sample: government-aided schools were over-represented. This is because only government-aided schools have all-boys, all-girls and SAP schools.

Sample Size

A total of 450 questionnaires (inclusive of those from the pilot survey) were administered to teachers from seven schools. The survey form was sent to every English-medium teacher. Of these, 400 teachers (88.9%) responded to the questionnaires and they submitted a list of 310 (77.5%) usable responses. The remaining 90 (22.5%) responses were deemed unusable as they were incomplete returns. These responses were categorised under effective teachers' dimension, personal, school and CPD dimensions, personal good qualities of effective teachers

and components of an integrated CPD programme.

Demographic Characteristics

Table 3: Distribution of Sample by Age (n=310)

Age	No Of Teachers	%
20-30 years old	106	34.2%
31-40 years old	87	28.1%
41-50 years old	23	7.4%
51-60 years old	94	30.3%
Total	310	100%

Table 3 shows the distribution of the sample population according to age. The overall pattern reflects the national age distribution of teachers in Singapore ranging from 22 years to 60 years old. The majority (34.2%) were below 30 years of age and between 41 to 60 years old (37.7%).

Table 4: Distribution of Sample by Years of Teaching Experience (n=310)

Years Of Teaching Experience	No Of Teachers	%
1-3 years	69	22.3%
4-10 years	86	27.7%
11-20 years	44	14.2%
21-39 years	102	32.9%
> 40 years	9	2.9%
Total	310	100%

Table 4 presents the profile of respondents according to their years of teaching experience. Slightly less than one-fifth (22.3%) of the respondents had less than 4 years of teaching experience while half the sample (50.0%) had more than 10 years of teaching experience. The sample showed a similar pattern (distribution) to the population of Singapore primary teachers.

Table 5: Distribution of Sample by Gender (n=310)

Gender	No. Of Teachers Surveyed	%age Of Teachers Surveyed
Male	57	18.4%
Female	253	81.6%
Total	310	100%

** Education Statistics Digest, 2000, MOE, Singapore*

As seen in Table 5, 81.6% of the respondents were females and only 18.4% were males, reflecting the national representation (National ratio-1:25; Sample ratio-1:23) in which the number of female teachers far outnumbered that of male teachers in Singapore. Therefore male and female teachers were closely represented in the study.

Overall the pattern of demographic characteristics of the subjects suggests a fair representation of the primary teachers in Singapore that increases the external validity of the present study.

Sampling for the Post-Survey Interviews

For the post-survey interviews, twenty-eight teachers were selected from the main sample through 'purposive sampling' (Cohen & Manion, 1980, p103), that is, according to age, gender and years of teaching experience.

Sampling for the Case Vignettes

For the case vignettes, two teachers each were identified for the four groups: Age (21-30; 31-40; 41-50; 51-60), Gender (male, female) and Years of Teaching Experience (1-3; 4-10; 11-20; 21-39; >40).

Section Three: Instrumentation

The survey method was used as the primary means of data collection. This method was deemed to be most appropriate as the questionnaire survey could be conducted within a short time and would provide quantitative data. It also allowed easy access to a rather large sample of teachers. The data that could be collected from the survey included teachers' perceptions of personal factors related to the kinds of skills (knowledge and understandings), attitudes and values essential to teacher effectiveness; school factors; CPD variables; characteristics of effective teachers and components of an integrated CPD programme. Background information such as age, gender, years of teaching experience, qualifications and type of school could easily be collected through the survey.

The Questionnaire

The questionnaire for the main study was the result of partially adapted and partially self-constructed items based on input from teachers and information gathered from literature review. The questionnaire was developed in five stages:

Stage One: Draft of Survey Questionnaire

The first step undertaken by the researcher before the commencement of the research was to draft a checklist of the types of data needed regarding CPD programmes in Singapore. The researcher then studied a variety of files, including the ones on staff in-service, minutes of meetings, posting memos, MOE and staff circulars on new teachers, school plans and files on policies and administration and

the Training Administrator System on Intranet (TRAISI) programme. There were two objectives for studying and conducting content analysis of school documents. The first was to find out if there was a formal document outlining the school's policy and plans with regard to the induction of beginning teachers. The second objective was to collect data that would allow conclusions to be drawn about the CPD programme in the school.

The study of documents revealed no records of school policies or plans on providing support for teachers. However, the information sought on the number of school-based and externally conducted courses organised throughout the year, the number of teachers attending either type of course, the number of school-based courses conducted by school personnel and the number of hours of training completed by each teacher, were easily extracted from the TRAISI programme. TRAISI records showed that most school personnel had utilised their right to 100 hours of training.

Items for the questionnaire were drawn from two sources: literature review and preliminary discussions with teachers. The Personal Factors Scale was adapted from the instrument used by NIE/MTU to assess the needs and skills of beginning teachers: 'Assessment of Performance of Teachers' and the instrument used by Ong (1999) to evaluate the needs of teachers. The Role of Principals scale and the CPD Activities scale were adapted from readings by Wideen and Andrews (1987) and an instrument used by Fesslar (1990) for his study on Principal and teacher behaviours towards CPD activities.

The Academic Development and Professional Development Scales were adapted from readings on adult learners (self-directed, experiential, reflective and collaborative) by Moore (1988) and the types of activities (Formal, Informal, Nonformal and Self-Directed) were adapted from readings by researchers (Mocker & Spear, 1982; Wood, McQuarrie & Thompson, 1982; Sparks, 1984; Shower, 1985; Garmston, 1987; Dallelew & Martinez, 1988; Hjornevik, 1988).

Stage Two: Preliminary Discussions

An unstructured preliminary discussion was carried out to explore issues and concerns of teachers, to hear their 'voices', to find out important areas regarding CPD that were directly related to teachers, and to gain teachers' shared perspectives and shared views of precise CPD needs. This first preliminary discussion was conducted with a focus group of eight English teachers in September 2000. At this stage, the researcher looked for clues to establish assumptions and beliefs of the school as to which areas should be explored.

During the discussion, teachers shared their perceptions on issues such as the knowledge and competencies required for teacher effectiveness, teacher needs for effective teaching and the characteristics of effective teachers. In addition, views on the shortcomings of the current CPD programme, the factors affecting CPD, motivating forces and obstacles to teacher participation, their understandings of the goals of CPD, essential support within the context of a learning organisation were explored. The benefits of CPD activities, preferred types of training as well as how the concept of the school as a learning organisation that includes the five disciplines:

systems thinking, mental model, shared vision, personal mastery and team learning (Senge, 1990) might enhance effective CPD practices with reasons, were discussed.

Data from the preliminary discussion offered topics for the researcher to establish a framework for further and more specific literature readings to construct the survey questionnaire and to establish the areas of focus in the study. After the readings, the researcher proceeded to hold a second preliminary discussion with the same eight teachers, to confirm the significant topics, the items and the structure for questions in the survey.

Focused questions were used to draw from the interviewees further issues that might have been missed out in the preliminary discussion and also to ensure that the questions could be easily answered in the survey (For Pre-Survey Interview Questions, see Appendix B).

An analysis of the transcripts confirmed to the researcher the construct of the survey instrument in terms of the language to be used, the flow of the questions and the main themes to be explored. The researcher then constructed a draft of the survey instrument based on adaptation of items from literature readings and from the discussions with teachers.

Stage Three: The Pilot Survey

The draft questionnaire was piloted with forty-three English-medium teachers in September 2000, at Contact Time in the researcher's school, to ensure that the questions developed would be relevant and comprehensible. The instrument was

field-tested in this school as respondents were easily accessible. The objective was to verify its suitability and the clarity of the items. Respondents were asked to check out the time taken to complete the questionnaire and should they encounter difficulty in answering the questions, to indicate the reason for the difficulty. The responses enabled the researcher to revise the questionnaire for the main study.

Several difficulties were identified, which included ambiguous items, repeated items and the language used for several items. For instance, respondents had difficulty with some terms that were then explained to them, for example, reflective practitioner, self-directed learner, experiential learner, adult learner, skilful performer, collaborative colleague, certification courses, quality learning circles and action research.

From the pilot survey, it was found that respondents took between twenty minutes to forty minutes to complete the questionnaire. Respondents experienced difficulties responding to the questionnaire and there was, therefore, a need to modify the survey question and the format of the questionnaire.

Stage Four: Validity

- Face Validity

In writing the questionnaire items, face validity was considered. As mentioned above, relevant items were selected based on literature review and on a first preliminary discussion with eight English teachers who were selected based on age, years of teaching experience and gender. Based on this, the survey instrument was drafted. A subsequent second preliminary discussion was further held with these eight

teachers to confirm the significant topics, the items and the structure for questions in the survey. The draft was further refined. Items were categorised according to the variables to be measured.

For example, in the sub-scale of personal needs, six main items and thirty-six sub items were developed: skills such as planning, instructional techniques, managing, interaction, assessing and relationship with community, that are related to the life cycle (age and gender) and years of teaching experience (career stages) of teachers. For the subscale of school factors, four main items and a total of eighteen sub items were developed: Role of Principals, Leaders, Colleagues and School Resources. For the subscale on CPD activities, twenty-four items were developed to measure teachers' participation in Formal, Informal, Nonformal and Self-Directed Activities.

- Structural Validity

Results from the pilot of the questionnaire were factor-analysed for structural validity. Structural validity was also tested for these subscales when all responses were collected. The data from the pilot study was subjected to a number of statistical analyses using the SPSS software. Prior to the analyses being carried out, a number of preliminary tests were made that established that the data could be analysed using the procedures. In particular, the data was checked to see that it was complete and that it was in a form that allowed for multivariate analysis and for Principals Component Analysis (PCA) or Factor Analysis.

The PCA technique was used as a statistical validation tool to precisely reduce the number of variables and to detect structure in the relationships between variables, that is, to classify variables by a single factor. This method of data reduction or structure detection reduces the variations in teachers' perceptions of their needs, of the Role of Principals, School People, School Resources and CPD activities. All the examining results supported that no significant violation was related to the multivariate analysis and that these variables could be used in the PCA, Multiple Regression, ANOVA and MANOVA. The PCA was performed according to the three groups of scales that are related to teachers' personal perceptions of needs (or skills), school environment and CPD activities.

Procedures and Results of the Principals Component Analysis

Following the identification of factors, Cronbach's alpha coefficient was calculated for each factor to test the reliability of the measurement.

Personal Factors

The Principals Component Analysis was performed for the six subscales of Personal Factors measure:

a) For Planning, only one factor was yielded. All five items for planning had very high factor loadings. The factor explains 87.4% of the total variance. The Cronbach's alpha coefficient for this scale is 0.963, indicating a high internal reliability of the scale.

b) For Managing Skills, one factor was yielded with all nine items having very high factor loadings. The factor explains 81.11% of the total variance. The Cronbach's

alpha coefficient for the scale formed by the nine items is 0.971, indicating high internal consistency of the scale.

c) For Skills in Instructional Techniques, the Principals Component Analysis yielded one factor, with all seven items having very high factor loadings. The factor explains 81.13% of the total variance. The Cronbach's alpha coefficient for the scale formed by the seven items is 0.961, indicating high internal consistency of the scale.

d) For Interaction Skills, the Principals Component Analysis generated one factor, with all four items having very high factor loadings. The factor explains 86.7% of the total variance. The Cronbach's alpha coefficient for the scale formed by the four items is 0.949, indicating high internal consistency of the scale.

e) For Skills in Assessing and Providing Feedback, one factor was generated with all six items showing very high factor loadings. The factor explains 85.3% of the total variance. The Cronbach's alpha coefficient for the scale formed by the six items is 0.965, indicating high internal consistency of the scale.

f) For Skills in Relations With School/Community, again one factor was yielded, with all five items for planning having very high factor loadings. The factor explains 86.02% of the total variance. The Cronbach's alpha coefficient for the scale formed by the five items is 0.959, indicating high internal consistency of the scale.

Indeed, the resulting factor structure showed six clearly defined categories that corresponded to the skills dimensions. All items had high factor loading (>.5) which give indication of the instrument's construct validity. The high alpha coefficients also support the sub-scales with high reliability.

School Factors

The Principals Component Analysis was performed to the six items in the category measuring the leadership (Role of Principals). The results showed that all six items had quite high factor loadings (>.5) on a single factor. The factor explains 62.26% of the total variance. The Cronbach's alpha coefficient for the six items is 0.877, indicating high internal consistency of the scale.

With oblique rotation, the Principals Component Analysis yielded two factors for the School People scale. The cut off point was determined as 0.3. All items related to Principals and Vice-Principals were loaded highly on Factor 1. At the same time, Experienced Teachers and Peers were loaded highly on Factor 2. From these items loaded on these two factors, Factor 1 was subsequently named as 'Leaders', since Principals and Vice-Principals are certainly the people who set the directions for the school and who hold power; and Factor 2 as 'Colleagues', defining these people as holding no power.

Results showed that people, namely Level Co-ordinators and HODs were loaded on both factors. In Singapore, although Level Co-ordinators are in charge of some administrative duties in schools and have some power, they are not considered as leaders in school as they are not involved in setting directions for the school. The loading for the item on HODs is slightly higher than the loading on the Factor of Leaders. This finding corresponds to the real working situation in schools. Although HODs are not as powerful as the Principals or Vice-Principals, they are empowered in dealing with administrative and school routine matters, for example, the assessment and ranking of teachers. Hence this item was factored in as an item in the

'Leaders' category. The Cronbach's alpha coefficient for the Factor of Leaders is 0.79, and the Cronbach's alpha coefficient for the Factor of Colleagues 0.81. These coefficients indicated high internal consistency of these scales.

The Principals Component Analysis was performed to the scale of School Resources. Only one factor was obtained. The Cronbach's alpha coefficient for this scale is .78.

CPD Factors

The Principals Component Analysis was conducted to identify the constructs that reflect teachers' responses to the two scales of CPD: Academic Development Activities and Professional Development Activities. The factor loadings reported below were based on oblique rotation that was performed to obtain statistical indication of the extent of correlation of the items with a particular factor.

When the PCA with oblique rotation was performed on eight items of Academic Development Activities, two factors were obtained. For Factor 1, items 4 to 8 were highly loaded (attending meetings as committee members, workshops and conferences; carrying out action research in the classroom, that is, identify and analyse problems and gather, interpret and evaluate information; reflecting continuously on teaching methodologies; constantly finding better ways of teaching, experimenting with new approaches, innovations to improve teaching; presenting at conferences). For Factor 2, the rest of 3 items were highly loaded (reading professional journals, writing, and reviewing textbooks and journals; observing other

teachers teaching and giving feedback; attending Open University or Masters courses).

From the original items, results yielded items loaded on Factor 1 that were all related to teachers' required professional work as experiential, collaborative and reflective practitioners. The other items loaded on Factor 2 appeared to relate to autonomous self-directed activities. So Factor 1 was named as 'Nonformal Activities' and Factor 2 as 'Self-Directed Activities'. The Cronbach's alpha coefficient for 'Nonformal Activities' is 0.75, and the Cronbach's alpha coefficient for 'Self-Directed Activities' is 0.72, indicating high internal reliability of the measurement of two factors.

When the Principals Component Analysis with oblique rotation, was performed on the sixteen items in the scale of Professional Development Activities, two factors emerged.

Three items (1 to 3): sitting in normal school staff meetings; school-based workshops; in-service workshops to listen to speakers, were loaded high on Factor 2. The rest of the items (4 to 16): observing demonstration lessons; getting feedback from observations of teaching; working at level meetings to set, vet and mark test papers; presentation of theory or description of new skills; opportunities for practice after learning new strategies; viewing video tapes; opportunities to share experiences and expertise; focused support groups (study groups); peer discussions with observations and coaching; simulations or role plays; learning circles, that is, identify,

investigate and report on a school-related problem or area of special interest; mentoring and quality learning circles using WITs tools, were loaded as Factor 1.

The three items loaded high on Factor 2 were found to consist of activities that are formal in schools: they are considered to be formal MOE core modules and teachers' attendance is taken. However the rest of the activities are not formal in schools. Hence, teachers have a choice and can volunteer to attend these activities. So Factor 2 was named as 'Formal Activities' and Factor 1 as 'Informal Activities'.

The Cronbach's alpha coefficient for Informal Activities is 0.92 and for Formal Activities is 0.82, indicating high internal consistency of the measurements on these factors.

In sum, the results of the PCA and Cronbach's alpha coefficients performed to the three groups of variables, yielded fourteen latent variables with high reliability and high structural validity. Six variables related to teachers' personal perceptions of needs (or skills), were found. They are: Planning, Managing, Instructional Techniques, Interaction, Assessing and Providing Feedback and Relations with Community. Four latent variables were identified as being related to the school environment. They are: Principals, Leaders, Colleagues and School Resources. Another four latent variables emerged as being related to CPD activities. They are: Formal Activities and Informal Activities (Academic Development Activities), and Nonformal Activities and Self-Directed Activities (Professional Development Activities).

After the factor analysis, the format of the instrument was revised and the items were amended to make the questionnaire more 'user friendly'. Duplications and obscure responses were eliminated and other closely related descriptions combined. This resulted in a total of 109 items. This revised final questionnaire was then administered to the main sample of 400 teachers. The final survey questionnaire is found in Appendix C.

Stage Five: The Second Pilot Survey

The instrument was re-piloted with the same forty-three teachers to further ensure that all the instructions were clear and that items would yield usable data. During the second round, it was evident that teachers generally found the survey questions simple enough to answer.

The Measures

The final questionnaire comprised three main measures: (1) Personal Factors Measure, (2) School Factors Measure, (3) CPD Activities Measure. Teachers were asked to answer the questions by a four-point Likert scale: Great Extent, Some Extent, Little Extent, or No Extent.

Personal Factors Measure

The Personal Factors Scale was developed to measure teachers' perceptions about their needs or skills by age, gender and years of teaching experience. This comprised thirty-six items on six aspects namely, planning, managing, instructional

techniques, interaction, assessing and providing feedback and relations with community.

Qualitative data was obtained through an open-ended item on teachers' perceptions of *Personal Qualities of Good Teachers*. This would give added information on teachers' perceptions of needs (or skills) as well as knowledge, attitudes and values of teachers that can effectively manage the educational changes.

School Factors Measure

This measure was developed to measure teachers' perceptions about the Role of Principals, Helpfulness of Leaders (Principals, Vice Principal, Heads of Departments), Helpfulness of Colleagues (Experienced Teachers, Level Co-ordinators and Peers), Types of School Resources (types of materials, timing, venue of CPD activities). Thus it comprised four subscales:

Role of Principals. This subscale measures the Principal's role in promoting CPD activities. This subscale contains six items that measured the extent to which teachers perceived Principals' involvement in promoting CPD.

Helpfulness of Leaders. This subscale contains three items that were developed to measure the helpfulness of Principals, Vice-Principals and Heads of Departments.

Helpfulness of Colleagues. This subscale contains three items that were developed to measure the helpfulness of Experienced Teachers, Level Co-ordinators and Peers.

Helpfulness of School Resources. This scale containing six questions was developed to measure the helpfulness of resources (types of materials such as MOE materials, Commercial or teacher-made materials, Materials made during pre-service, School Library materials, for example, Teacher Resources, Computer Lab and LAN/Internet services).

To obtain qualitative data on School Resources, three open-ended questions were included to find out the preferred timing and venue of CPD activities.

CPD Factors Measure

This measure sought to measure teachers' perceptions about current CPD activities. It has two subscales:

Academic Development Activities. This subscale contains sixteen items that were developed to measure the involvement of teachers in Formal and Informal activities.

Three items were developed for Formal Activities: sitting in normal school staff meetings; school-based workshops; in-service workshops to listen to speakers. Thirteen items were developed for Informal Activities, for example, observing demonstration lessons; getting feedback from observations of teaching; working at level meetings to set, vet and mark test papers; presentation of theory or description of new skills; opportunities for practice after learning new strategies; viewing video tapes; opportunities to share experiences and expertise; focused support groups (study groups); peer discussions with observations and coaching; simulations or role plays; learning circles, that is, identify, investigate and report on a school-related problem or

area of special interest; mentoring and quality learning circles using WITs tools (Trohanis & Jackson, 1980; Little, 1981a; Wood, McQuarrie & Thompson, 1982; Sparks, 1984; Wlodarczyk & Bandy, 1984; Shower, 1985; Garmston, 1987; Hjornevik, 1988).

Professional Development Activities. This subscale contains eight items that were developed to measure current teacher involvement in types of CPD activities as adult learners.

For the Self-Directed Activities subscale, three items were developed such as reading professional journals, writing, and reviewing textbooks and journals; observing other teachers teaching and giving feedback; attending Open University or Masters courses, to measure teachers' involvement as self-directed learners.

For the Nonformal Activities subscale, five items were developed to measure teachers' involvement as experiential, reflective and collaborative learners. Examples of such activities are: attending meetings as committee members, workshops and conferences; carrying out action research in the classroom, that is, identify and analyse problems and gather, interpret and evaluate information; reflecting continuously on teaching methodologies; constantly finding better ways of teaching, experimenting with new approaches, innovations to improve teaching; presenting at conferences (Wood, McQuarrie & Thompson, 1982; Sparks, 1984; Shower, 1985; Garmston, 1987; Hjornevik, 1988).

Qualitative data on CPD activities were sought through two open-ended questions: What would motivate them and what would hinder them from participating in CPD activities?

Procedures For Administering The Questionnaire

As mentioned above, to obtain higher external validity, there is a need to secure a representative sample. To accomplish this, some procedures were adopted to encourage school Principals to support their teachers to participate the study. Data collection for the main study took place from 25th September 2000 to 15th November 2000 in two main stages.

Stage One: Administering the Survey

First, a formal request for approval to collect data from the sample schools was submitted to Head, Data and Administration of the Ministry of Education in September 2000. The approval was granted promptly.

Secondly, telephone calls were made to Principals to ask for personal permission to survey the English-medium teachers in their schools. Most Principals readily agreed although some expressed concerned about the identity of teachers and time taken for teachers to fill in the questionnaire. To allay this fear, Principals were told that the survey would be anonymous and that teachers could complete the survey at their convenient time and in their privacy.

Thirdly, upon the Principals' consent, the self-constructed questionnaire survey, together with a copy of the approval from the Ministry and a note to thank them and staff (for their co-operation) was hand delivered to schools on 25th September 2000. In the covering letter, the purpose of the survey was explained and teachers were also assured of the confidentiality of the information provided by them as well as their anonymity. Teachers were asked to return the completed questionnaires to the researcher within a week. This deadline was clarified to ensure prompt submission of the questionnaires.

Fourthly, nearing the date for submission, telephone calls and e-mails were sent out to remind schools of the deadline. Finally, the completed returns were collected by hand on 4th October 2000.

Stage Two: Post-Survey Interviews

As mentioned earlier, after an analysis of the responses to the questionnaire, the researcher used a triangulation device by conducting structured post-survey interviews from 1st to 15th November, 2000. The interviews were conducted with twenty-eight teachers identified from seven schools, based on their age, gender and years of teaching experience. The interviews focused on issues that needed more details underlying reasons of responses in the survey questionnaire. Guided questions were used to obtain content-specific transcripts (For Post-Survey Interview Questions, see Appendix D).

The initial interview questions were drawn from the questionnaire results and were first piloted with two teachers to ensure that the form of questioning was clear

and would not antagonise the respondents, while at the same time allow for a clear understanding of responses during the analyses of transcripts. The final interview was conducted with the twenty-eight teachers as mentioned above. These interviews were conducted in schools and lasted an hour each, using structured questions to extend on findings and to clarify any ambiguities.

Stage Three: Interviews for Case Vignettes

A schedule for the videotaping of the interviews for case vignettes was prepared. The interviews took place in respondents' schools between 1st November 2000 to 15th November 2000.

Guided and structured questions were drawn from the post-interviews to gain specific examples of four groups of teachers for the case vignettes. The content-specific transcripts were analysed to draw simple comparisons among teachers of different age groups, gender and years of teaching experience (For Interview Questions for Case Vignettes, see Appendix E).

Methods of Statistical Analyses

After the final sample of 310 was drawn, coding was carried out manually in December 2000. The data collected on the themes was subjected to a number of statistical analyses using the SPSS software to record, score and analyse all the responses. Prior to the analyses being carried out, a number of preliminary tests were made to establish that the data could be analysed using the procedures. In particular, the data was checked to see that it was complete and that it was in a form that allowed

for ANOVA, for multivariate analysis (Multiple Regression and MANOVA) and for the Principals Component Analysis (PCA) or Factor Analysis. Descriptive statistics (Mean, Standard Deviation) were employed to yield teachers' responses scored on the Likert Scale, across age, gender and years of teaching experience. All these methods were used to measure the variables related to the model in Chapter Two.

Responses gathered from the open-ended item on 'personal qualities' were recorded and manually coded. Items that were similar in nature were classified into twenty-two categories. For example, similar items such as 'thoughtful', 'gentle', 'considerate' and 'compassionate' were grouped together in the category 'caring'. Percentages scores were then computed based on the total number of responses.

Responses gathered from the post-survey interviews were transcribed word verbatim. A trend analysis of teachers' discussion was carried out and relevant responses were used to support and emphasise data findings. Responses from the case vignettes were similarly transcribed word verbatim and responses were used as examples to highlight data findings. Besides face and structural validity, other measures for high internal validity included conducting the survey individually, and ensuring that the identity of the respondents remained anonymous and confidential.

Conclusion

This chapter has outlined the broad methodological considerations, the sampling, the instrumentation, the measures, the research procedures and the methods of statistical analyses, relevant to a study of this type.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter presents results from descriptive and inferential statistical analyses in a systematic manner and highlights significant findings from the research and tests the hypotheses in the proposed model in Chapter Two. The findings are reported in two broad areas.

Section One presents the descriptive statistical results on Singapore teachers' perceptions of personal, school and CPD variables in CPD. Section Two presents the results for testing the hypotheses in the model proposed in Chapter One. All relevant inferential statistical analyses results will be reported in this section.

In these two sections, relevant qualitative results and discussion will be also included. The hypotheses in the model for testing suggest that Singapore primary school teachers' CPD activities are related to their personal factors and school factors (Role of Principals, Leaders, Colleagues and School Resources). An underpinning assumption is that teachers bring to their workplace attitudes and values that have developed in the course of their lives and in relation to their experiences in the classroom. Thus a key research task is to understand how these personal factors influence the views of teachers about their professional development. Likewise, school factors too influence the way teachers participate and commit themselves to

their own development. How leadership is involved, the availability of resources and the relationships among colleagues are critical to our understanding of teachers' motivation to undertake CPD. In addition to these two major factors, the types of training, content, venue and timing are critical in influencing teachers' participation in CPD and providing quality CPD.

Finally, Section Three provides findings on perceptions of personal qualities of 'good' teachers that would augment their abilities to address the educational changes more effectively and components of an integrated CPD programme for Singapore schools.

Section One: Perceptions of Personal, School and CPD Variables in CPD

The SPSS software was used to perform descriptive statistics on all fourteen latent variables reported in Chapter Three. ANOVA and MANOVA were used as a data analysis strategy to calculate statistically, the summary measures to test the hypotheses in the proposed model that predicts that teachers' involvement and commitment to CPD is influenced by several factors: personal, school and CPD variables. The overriding findings from the current study's questionnaire data and interviews were that CPD were valued most highly when it was related to classroom needs, when it was supported by the leadership of the school and freely chosen. The results are shown in Table 6.

Table 6: Perceptions of Personal Needs by Whole Group, Age, Years of Experience and Gender (n=310)

SKILLS (NEEDS)	Whole Group		Age Group								Experience										Gender			
			20 to 30		31 to 40		41 to 50		51 to 60		1 to 3		4 to 10		11-20		21 to 39		>40		M		F	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Planning	2.50	1.06	3.12	0.75	2.51	1.07	1.86	0.87	1.92	0.99	3.33	0.71	2.95	0.80	1.80	0.83	1.89	0.96	2.23	1.01	2.48	1.12	2.51	1.05
Instructional Techniques	2.53	1.06	3.12	0.76	2.51	1.03	1.99	0.96	1.98	1.06	3.26	0.75	2.99	0.77	1.88	0.85	1.96	1.03	2.02	1.09	2.44	1.11	2.55	1.05
Managing	2.52	1.07	3.17	0.75	2.51	1.05	1.94	0.93	1.92	0.99	3.28	0.73	3.06	0.78	1.80	0.80	1.91	0.97	1.91	1.03	2.43	1.09	2.54	1.06
Interaction	2.58	1.05	3.19	0.71	2.58	1.03	2.07	0.95	1.98	1.03	3.35	0.68	3.04	0.77	1.99	0.83	1.96	1.01	1.79	0.98	2.46	1.08	2.60	1.04
Assessing	2.46	1.07	3.10	0.74	2.43	1.06	1.86	0.94	1.89	1.03	3.25	0.73	2.94	0.81	1.72	0.78	1.86	1.00	2.17	1.21	2.41	1.11	2.47	1.06
Relationship with Community	2.43	1.09	3.07	0.79	2.40	1.07	1.87	1.03	1.85	1.03	3.15	0.82	2.93	0.80	1.81	0.95	1.84	1.01	1.83	1.21	2.43	1.14	2.43	1.08

Midpoint = 2.5

a) Perceptions of Personal Factors (Needs)

By Whole Group

Table 6 presents the means and standard deviations on personal factors (needs or skills) by whole group, by age groups, by years of experience and by gender. The results for the whole group were all around the midpoint of the sub-scales (2.5), suggesting that Singapore teachers felt the need, but not keenly, to learn new skills to cope with changes in the education system. During interviews, they perceived that they were able to perform their jobs well enough (Mr Tham, male, 51 years old, 30 years of teaching experience, p90), although there seemed to be a greater awareness of the need for Interaction Skills (M=2.58; SD=1.05), followed by Skills in Instructional Techniques (M=2.53; SD=1.06) and Managing Skills (M=2.52; SD=1.07; see Interviews, p87-90).

By Age Groups

Analyses of results by age groups, years of teaching experience and gender showed variations in perceptions of needs. Among all teachers, the youngest group of teachers (20-30 years old) expressed the strongest needs for all skills since all the means are above the mid-point of 2.5. However, as they became older, their perceived needs decreased. When they are over 40 years old, Singapore teachers do not really feel the need to develop their skills. This could be that they are in the 'Transition from Youth to Maturity Phase' (Schlechty and Whitford, 1983) and the 'Life Review and Stock Take Stage' (Sikes, 1985, cited in Ball & Goodson, 1985) in which they have not progressed in their careers and are stagnating.

ANOVA and follow-up post hoc (Tukey) tests showed significant differences between either 20 to 30 years (Entering the Adult World Phase and Career Entry Stage) or 31 to 40 years (Settling Down Phase and Stabilisation Stage) and the other teachers, suggesting that the older group of teachers have become more stable in their teaching.

By Years Of Teaching Experience

Teachers with the least years of teaching experience (1-10 years of teaching experience) indicated a stronger need to develop their skills while those with more years of experience did not express similar strong sentiments. ANOVA tests and post hoc tests showed significant differences between teachers with 1-3 years of teaching experience and teachers with 4-10 years of teaching experience.

The similarity in trend of the results by age and years of experience is not surprising as these two factors share a lot of variance. It is possible that young teachers and teachers with the least years of teaching experience who are in the 'Career Entry Stage' and 'Entering the Adult World Phase', feel a stronger need to develop their skills further since they might not be as confident about their teaching as compared to their older colleagues who are in the other stages and phases and who may not share a similar need since they perceive themselves as very experienced and confident (Miss Lee, female, 26 years old, 1 year of teaching experience, p90).

According to researchers (Super, 1957; Schlechty & Whitford, 1983; Sikes, 1985, cited in Ball & Goodson, 1985; Huberman, 1985, cited in Kremer-Hayon, Vonk & Fesslar, 1993; Burden, 1986; Huberman, 1988; Little, 1989; Leithwood,

1992), these older teachers who are in the last stages of their careers (Professional Plateau and Preparing for Retirement Phases) perceive retirement as an attractive prospect and might consider themselves as authorities on the job.

By Gender

Female teachers appeared to have higher needs than male teachers. Since all the means for male teachers were below the mid-point of 2.5, their needs were not significant. One possible conclusion to draw is that male teachers would be less interested in training (Mr Lam, male, 28 years old, 2 years of teaching experience, p90). Female teachers, however, expressed needs in Interaction Skills (M=2.60; SD=1.04), Skills in Instructional Techniques (M=2.55; SD=1.05), Managing Skills (M=2.54; SD=1.06) and Planning Skills (M=2.51; SD=1.05).

Data showed significant differences (Difference=1.51) with the mean of 3.13 for the youngest teachers (21-30 years old; n=106) and the mean of 1.62 for the oldest teachers (51-60 years old, n=94). Data showed significant differences (Difference=1.28) with the mean of 3.27 for youngest teachers (1-3 years old, n=69) and the mean of 1.99 for the most experienced teachers (>40 years, n=94). However, data showed little difference (Difference=0.08) with the mean of 2.44 for male teachers (n=57) and with the mean 2.52 for females (n=253).

The current study shows that gender differences are not as large and significant when compared to age and years of experience, contrary to research findings (Butler, 1963; Levinson et al, 1978; Sikes, 1985, cited in Ball & Goodson,

1985) that gender differences are apparent at different points in male and female teachers' life cycles.

Interview Findings

The interviews helped to explain teachers' needs and the expressed differences in needs between young and experienced teachers (For Analysis of Singapore Teachers' Perceptions Of Specific Needs, see Appendix F). Generally, young female teachers appeared to be more active in seeking to learn a range of new skills. For example, one beginner said she felt she needed to learn how to interact effectively with pupils so as to 'first win over my pupils to behave and to get better results, secondly to understand their problems, to hear them out and to help them to study, so that when parents know I'm teaching well, they will complain less' (Mr Tan, 29 years old, 3 years of teaching experience). Types of parental complaints included the use of corporal punishment, inaccurate marking and a high level of absenteeism among teachers.

Several young and less experienced teachers recognised the importance of knowing, 'how to build rapport with parents, how to talk with parents about their children so that they will not be so reactive and unreasonable, because parents nowadays are getting more and more sophisticated; they are more qualified than those ten years ago' (Ms Wong, female, 25 years old, 2 years of teaching experience). One teacher remarked, 'we can do with less interruptions and complaints (from parents) which are a nuisance' (Mr Lim, male, 28 years old, 3 years of teaching experience).

Besides these basic classroom teaching skills, teachers also identified the need for skills that would enable them to implement the new initiatives. As one teacher said, 'With the changes, we have to know what is required of us. Especially, with new initiatives (IT, National Education, Thinking), we have to understand what this change is, how it works, what we need to do. We need to know the diverse needs and abilities of our students. We need to take time to find suitable software to teach the pupils and learn how to use IT in lessons. We must be effective in promoting the TSLN initiatives and to address the educational changes but at the same time, it is important to learn how to achieve good results. At the same time, we must learn how to teach creativity and how to promote thinking skills. We are representatives of the change' (Mr Yap, 28 years old, 2 1/2 years of teaching experience).

One other said, 'We are going through fast paced changes...one way for us to be equipped is to be lifelong learners. We recognise the power of education and one way to cope with the new demands is to go for upgrading, to attend courses to help us to be effective...then we can achieve better results and the school can improve. We do see ourselves as significant change agents. We need to be involved, to understand the policies, otherwise, the change will not take off successfully' (Miss Lee, 26 years old, 1 year of teaching experience).

Several interviewees acknowledged the importance of attaining knowledge to keep abreast with advances in subjects and to keep up to date with pedagogy. As one interviewee explained, 'so that teachers can be ahead of their pupils and be equipped for teaching in the new millennium' (Ms Hee, female, 29 years old, 8 years of teaching experience). This was supported by another interviewee who acknowledged

that 'proficiency in essential skills such as IT and innovative strategies (co-operative learning, graphic organisers, mind maps) together with increased knowledge result in gained confidence in achieving good results and promoting TSLN' (Ms Choo, female, 30 years old, 10 years of teaching experience).

Another expressed need was in learning how to manage pupils especially Autistic and Attention Deficit Hyperactive pupils in order to 'get their attention, listen and behave properly in class' (Mr Lam, male, 28 years old, 2 years of teaching experience).

Yet another teacher indicated the need to plan quality lessons for different ability groups. 'As teachers, we need to recognize individual differences and different styles of learning and plan differentiated lessons to apply different methods of teaching. We also need to teach pupils more effectively, for example, use co-operative learning strategies to motivate the students. We must be always be one step ahead of them in content knowledge. Especially as, nowadays, pupils are all so knowledgeable and intelligent: they know how to surf the net to gain the latest information' (Ms Wong, female, 25 years old, 2 years of teaching experience).

Another interviewee confirmed that 'as assessment modes have changed, teachers would need help in setting papers to be aligned with the changes. We need to know how to test pupils with different abilities and to evaluate their progress' (Ms Ang, female, 27 years old, 3 years of teaching experience).

Male and older teachers did not reveal urgent needs to develop their skills, except for the use of IT. Typical responses were represented by this young male teacher's comments, 'We have gone through 3 years of National Service, unlike the female teachers, and learnt survival skills so we are confident that we can survive and don't need help as much as them' (Mr Lam, male, 28 years old, 2 years of teaching experience).

Another older male teacher added, 'We have gone through the mill, the ups and downs, the ins and outs, we know more or less what to expect, so we are able to manage better. Yes, there are changes. So we must be involved, we must know the what and the how of change. Otherwise, how can we be good role models? But I don't think we need to go for courses although we are concerned about these changes, except for IT as we are not very IT-savvy. We can also learn how to manage parents who are nowadays very much more demanding' (Mr Tham, male, 51 years old, 30 years of teaching experience).

As teachers are at different entry points and have different experiences and needs, one teacher succinctly captured the needs as, 'Young teachers have little experience and will usually need managing and assessing skills. Older teachers will need help with IT. All of us will need to learn counselling and communication skills especially in dealing with a class of forty pupils, and difficult parents' (Miss Lee, female, 26 years old, 1 year of teaching experience).

Summary

As a whole, Singapore teachers do not feel very keen current needs to develop their skills and appear to be able to cope well enough with the TSLN changes, with the exception of young and less experienced teachers. The findings support recent research (Ryan, 1987; Cooke & Pang, 1991; Cole, 1997), that young and beginning teachers have greater perceptions of problems and needs. Broadly, research suggests several reasons as to why young or beginning teachers have problems. First, they are under-prepared since the help and support they receive, in their new careers as they face the reality of their teaching situations, is inadequate. Often, new teachers are left on their own to 'sink or swim' and to face the most difficult situations in school. They are expected to overcome these frustrating times alone. In fact, the first years of teaching are frequently synonymous with the 'school of hard knocks'.

Secondly, they are also ill-prepared for instructional failures, changes in responsibility, time, commitment and feelings of teacher isolation that are so prevalent during the first year. The reason is simple: the pre-service training they received is general and insufficiently directed towards specific jobs in specific contexts.

Thirdly, other researchers (Huling-Austin, Odell, Ishler, Kay & Edelfet, 1989) suggest that beginning teachers have to face too rapid a transition to full responsibilities. Indeed, the first experiences of new teachers are a test of survival and a time of personal growth and development. Literature describes this experience as 'reality shock' or 'transition shock' (Veenman, 1984). This period of transition also varies depending on individuals and their circumstances, such as the beginner's pre-

service training, age, life experiences, states of ego and nonformal development (Muller-Fohrbordt, Cloetta & Dann, 1978).

This period likewise involves the acquisition and strengthening of knowledge and skills. Literature points out that common needs do exist. One of the biggest problems faced by beginning teachers is the lack of experience. Other problems faced include classroom discipline, motivating students, dealing with individual differences amongst students, identifying appropriate levels at which to teach, assessing student's work and progress, relations with parents and reality shock. Studies further highlight the importance of the role of the school in meeting the needs of beginning teachers (Ryan, 1987; Cooke & Pang, 1991; Cole, 1997).

The interview and questionnaire data findings also correspond with findings by Levinson et al (1978) that for the youngest and least experienced teachers, learning how to interact and communicate the subject to various groups of pupils together with discipline seem to be the most intimidating aspects of the job.

Results also showed that all male teachers surveyed, including older and more experienced teachers did not indicate very strong needs. During interviews, male teachers generally displayed a certain complacency towards CPD as compared to female teachers. Interestingly, teachers interviewed appeared to want to be good role models (Mr Tham, male, 51 years old, 30 years of teaching experience, p90) and to be able to address the oncoming changes in the education system (Ms Lee, 26 years old, 1 year of teaching experience, p88), perceiving themselves as 'critical change' agents. Indeed, during the interviews, the younger and less experienced female

teachers appeared to be the most highly motivated among all the teachers to want to attend training for future needs.

For example, this teacher pointed out, 'We want to go for training to upgrade ourselves, but right now, if we can cope quite well, we will not go. One of the reasons is that we are really very busy. But, if we want to be effective change agents, we will need to learn up-to-date pedagogy..... and other skills to manage the continuous new initiatives.....such as perceptual skills like strategic planning, innovation and entrepreneurship. These will help us to translate the TSLN vision into reality and to be lifelong learners. Otherwise we will lose out' (Ms Boo, female, 35 years old, 10 years of teaching experience). This enthusiasm appeared to decline as teachers grew older and became more experienced.

In some sense, this finding is useful for it reveals a certain interest among teachers to want to be trained to stay relevant and to sustain the change with its oncoming initiatives, and for female teachers to be motivated to want to improve. It is disconcerting that with age and years of experience, this interest declines.

Although the majority of teachers surveyed in this study are older teachers, that is, above 30 years old (65.8%), nonetheless they are important resources to shape the educational changes. Whilst these older teachers may have more experience, the new initiatives certainly require teachers to acquire, perhaps even be competent in a new set of classroom teaching skills. For teachers to be effective change agents, they should have the knowledge and expertise regarding content and the process of change. It is when teachers improve that schools improve (Wideen & Andrews, 1987;

Sparks & Loucks-Horsley, 1989; Fullan, 1993; Hargreaves, 1994; Craft, 2000). So, if Singapore teachers do not perceive strong needs to improve classroom teaching skills as a first step, they may not be so readily able to fulfil their role as change agents. Thus the lack of recognition of personal needs or skills on the part of older teachers and all groups of male teachers has serious implications for the success of the new initiatives.

b) Perceptions of School Factors

By Whole Group

Table 7 shows the means and standard deviations of school or external factors by whole group, by age groups, by years of experience and by gender. The results by whole group for school factors were higher than the midpoint of 2.5, with the exception of the Role of Principals where the mean is quite low (M=2.19; SD=0.95). Results showed that teachers perceived their Colleagues (that is, Level Co-ordinators, Experienced Teachers and Peers) as most helpful, followed by Leaders (that is, Principals and Vice-Principals, Heads of Departments) and School Resources in their helpfulness in their CPD involvement. The results indicated little differences among the means in the Role of Principals and Leaders. ANOVA tests did not show any significant difference for the teachers by age groups, by years of teaching experience and by gender on these two scales, suggesting that teachers felt that the leadership could be more involved in helping them to improve teaching.

By Age Groups

All age groups rated Principals' involvement in promoting CPD activities lowest. All means were below the mid-point of 2.5, suggesting that Principals were

not perceived as having done enough to promote teachers' CPD activities. This finding was confirmed during interviews (p98–103). It is interesting that the youngest teachers viewed Colleagues (M=3.31; SD=0.71), as most helpful, followed by Leaders (M=3.21; SD=0.74) in their professional development.

Older teachers (41-50 years old) seemed to also have a slightly better appreciation of the Role of Principals, Colleagues and Leaders, than their younger colleagues. ANOVA and Tukey post hoc tests partially confirmed these perceptions. This finding is interesting too, as teachers during this phase (Transition from Youth to Maturity Phase and Life Review and Stock Take Stage), are either successful teachers who are in senior management positions or unsuccessful teachers who might be coasting or conversely generating and still positive (Butler, 1963; Levinson et al, 1978; Sikes, 1985, cited in Ball & Goodson, 1985).

The oldest group of teachers (51-60 years old) gave the lowest scores to all school factors. One possible reason is that they are in the 'Preparing for Retirement Phase' and the 'Reaching the Professional Plateau and Retiring Stages', so they are less interested in CPD and the support available.

All age groups (Table 7) considered the availability of School Resources as considerable in influencing their CPD involvement (see Interviews p103-107). The perceptions of the youngest group of teachers (20 to 30 years old) on School Resources (M=2.97; SD=0.76) were significantly lower than those of older teachers (41 to 50 years old, M=3.16; SD=0.68). ANOVA and Tukey post hoc tests showed significant differences in the perceptions of the youngest teachers. It is possible that

these young teachers possess more knowledge of new technologies and therefore, their expectations of School Resources are higher than those of the oldest teachers.

Table 7: Perceptions of School Factors by Whole Group, Age, Years of Experience and Gender (n=310)

SCHOOL FACTORS	Whole Group		Age Group								Experience										Gender			
			20 to 30		31 to 40		41 to 50		51 to 60		1 to 3		4 to 10		11 to 20		21 to 39		>40		M		F	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Role of Principals	2.19	0.95	2.22	0.98	2.14	0.91	2.49	0.97	2.11	0.91	2.12	0.95	2.22	0.95	2.23	0.95	2.17	0.93	2.31	1.01	2.09	0.95	2.21	0.94
Leaders	3.03	0.80	3.21	0.74	3.02	0.74	3.25	0.77	2.76	0.86	3.17	0.76	3.13	0.78	3.04	0.69	2.86	0.86	2.83	0.92	3.23	0.71	2.99	0.82
Colleagues	3.23	0.77	3.31	0.71	3.18	0.77	3.40	0.81	3.14	0.83	3.26	0.78	3.24	0.74	3.28	0.68	3.16	0.84	3.61	0.61	3.30	0.77	3.21	0.78
School Resources	2.93	0.75	2.97	0.76	2.95	0.74	3.16	0.68	2.80	0.74	2.95	0.73	2.91	0.81	3.11	0.63	2.84	0.73	3.22	0.72	2.98	0.77	2.92	0.74

Mid-point=2.5

By Years of Teaching Experience

Similar findings were generated for teachers by years of teaching experience. All groups considered Principals as least involved and regarded Colleagues, then Leaders, as most helpful. Surprisingly, the most experienced teachers (>40 years of teaching experience) gave the highest scores to Colleagues (M=3.61; SD=0.61) as being most helpful. It is easy to understand this, since teachers who are at this 'Reaching a Professional Plateau and Retiring Stages' and the 'Preparing for Retirement Phase', become freer in their attitude and are more matured. They are probably looking forward to retiring so they view their colleagues as not only partners-in-education, but as friends too (Mr Ong, male, 56 years old, 35 years of teaching experience, p102). Again, all groups considered the availability of School Resources as important in influencing their CPD involvement.

By Gender

Male teachers, compared to female teachers, showed a better appreciation of all school factors by giving the highest scores. Both male and female teachers considered Principals least helpful. Colleagues were found to be most helpful, followed by Leaders and School Resources, suggesting that the support and help from Colleagues and Leaders together with the availability of School Resources were high (see Interviews, p98-107).

Interview Findings

All the above findings were supported by interviewers. Interview data revealed a high expectation of the Principal's role in promoting CPD. Many teachers expressed that Principals did not demonstrate an adequate understanding of teachers'

specific CPD needs. They opined that Principals could be more helpful. As one teacher put it, 'They should specifically promote CPD by selling the benefits of training and telling teachers what they can achieve at the end of the training so that they can see the results before and after... that way, they would be motivated to go for courses and it is very critical also for teachers to understand why they are sent for courses – that in the first place, they are sent not just to meet the quota. I think teachers feel very resentful about this. Essentially they must know that they need to improve themselves and must be receptive to courses' (Mr Ho, male, 30 years old, 9 years of teaching experience).

There was an expressed need for a clearly articulated school vision and direction which ensures that CPD fit into the overall school vision. 'Principals should set the direction by setting up a structure for a total CPD plan that is linked to school goals. Then everyone in the school is motivated to move together in one direction' (Mrs Khoo, female, 39 years old, 15 years of teaching experience).

For teachers to be further motivated, CPD plans too must be linked to teachers' career development. As one teacher commented: 'There should be a yearly plan for teachers in the school for continuing professional growth' (Mr Yeo, male, 37 years old, 12 years of teaching experience). Additionally, Principals should 'encourage teachers to further themselves, suggest a career prospect plan and a staff development plan so that staff will participate in team learning' (Mr Chee, male, 45 years old, 19 years of teaching experience).

One teacher described the role of Principals as 'being in the position to develop the school as a learning organisation by encouraging teachers to have a shared vision of lifelong learning, being a good role model in engaging in systems thinking, helping teachers to have a mental model of school improvements through effective training and achieving personal mastery through team learning' (Ms Boo, female, 35 years old, 10 years of teaching experience).

Another teacher captured the essence of the role of Principals as, 'providing a vision of continuous learning, creating an environment, a climate, so that every individual can move on in their careers in the school and contribute positively in a never changing-environment in the face of high speed changes' (Mrs Ho, female, 43 years old, 18 years of teaching experience).

Other comments were: 'Principals must role model the learning and take a lead in teachers' training' (Mr Tan, male, 29 years old, 3 years of teaching experience). 'They should show compassion and empathy, be kept more abreast of teachers' responsibilities before delineating duties to these respective teachers to prevent overload. Teachers will then be more willing to try new ideas after attending courses, with no fears of mistakes. We have different views on the training policy and MOE should get our feedback' (Ms Goh, female, 33 years old, 10 years of teaching experience).

One interviewee commented on the need for support such as providing released time for staff development, 'The Singaporean mentality is one of unquestionable obedience: when Principals say go, one must go. One dare not protest,

so Principals must really know what teachers need and help teachers to develop. Very importantly, they must be supportive, especially in giving time off, like Saturdays off for us to go for training' (Ms Wong, female, 25 years old, 2 years of teaching experience).

Yet another teacher added, 'Observations should be less stressful. So Principals really can arrange for us to visit, observe and learn from each other in our classes as one form of staff development' (Mr Han, male, 41 years old, 16 years of teaching experience).

Interview findings confirmed research that Principals' support is key to successful CPD (Crandall, 1982; Fullan, 1982; Leithwood & Montgomery, 1982; Goodlad, 1984; Goldring & Rollis, 1993).

That Colleagues were ranked highest for all groups indicates that peers were the most important support for all teachers' development. For example, Level Coordinators were found to be helpful as a 'source of encouragement by providing a listening ear, as well as practical tips on setting assessment papers and on instructional strategies for teaching the new syllabi, and by disseminating information and materials that they were supposed to, rather promptly' (Miss Poh, female, 28 years old, 3 years of teaching experience).

Another remarked, 'Level Co-ordinators act as bridges between HODs and teachers. We are very comfortable with them as they have disseminated information

from Office, given us the level worksheets and informed us of last minute changes' (Mr Chan, male, 42 years old, 19 years of teaching experience).

One other said this about the helpfulness of Peers and Experienced Teachers - that 'they are good sources for exchange of ideas. They have been helpful and kind in sharing their experiences and showing us different ways of tackling comprehension and composition skills. They have been very enlightening and they have provided very good strategies and useful tips on teaching strategies' (Mrs Chen, female, 33 years old, 10 years of teaching experience).

Interviews with an older teacher confirmed that the high ratings given to Colleagues were that 'In my case, I have been in service for more than thirty years. I have worked with some of my colleagues for thirty years and we have become family friends. We give each other lifts to school and even have family outings on Sundays' (Mr Ong, male, 56 years old, 35 years of teaching experience).

A female interviewee added, 'It is easier to share my problems and needs with my colleagues. One of them sits next to me in the staff room, and it's much easier to get materials from her. All of us teaching the same level sometimes share the same classes, so we attend the same courses, share taxis and go for lunch together. We also have common problems, like difficult parents' (Miss Low, female, 25 years old, 3 years of teaching experience).

According to Fielding and Schalock (1985) the organisational culture serves to support CPD activities. The findings point to the importance of active leadership in

offering support and time for people to devote to learning endeavours, and in setting up a system in which Colleagues and Leaders can play key roles to shape schools as learning organizations.

Young interviewees confirmed that Leaders 'such as the Heads of Departments are important as resources in rendering guidance and moral support' (Mrs Ang, female, 27 years old, 3 years of teaching experience), and in 'sharing invaluable ideas, experiences, techniques and materials/resources' (Mr Lam, male, 28 years old, 2 years of teaching experience).

One young male teacher explained the higher scores given to Leaders and Colleagues by male teachers, 'We feel less inhibited and can mix around more freely with these two groups of people. In the Asian background, it is normal for males to take the dominant role or lead, so the leadership and our colleagues accept us more readily when we talk.....do things.....and they are more friendly, more understanding, more helpful and interact more with us. Most times, especially the HODs bridge the gap between us and the administration' (Mr Tay, male, 28 years old, 4 years of teaching experience).

On School Resources, teachers reported that they found MOE Materials useful as 'these serve as comprehensive guides on thinking methodologies; and computer labs also contain software on thinking'. These resources enhanced lesson introduction and reinforcement and generated more activity-oriented and practical lessons. Teaching materials from cluster sharings as well as the exchange of lesson plans, materials, schemes of work for various subjects and test items were

exceptionally useful in helping to 'enhance teaching and learning'. Pupils learnt Math better using commercially-produced manipulatives.

In addition, some resources directed teachers to 'other sources of materials and different kinds of writing styles to meet pupil needs' and challenged them 'to explore and use the potential of resources that others have tried out and succeeded' (Ms Choo, female, 25 years old, 3 years of teaching experience). In short, teachers were of the general view that the use of teaching resources 'had enhanced their teaching and resulted in increased pupil understanding' (Ms Wong, female, 25 years old, 2 years of teaching experience). This result supports the finding by Mortimore (1991) that resources are a key factor in school effectiveness.

Teachers too applauded MOE's move to make teaching materials available to teachers at no cost. This move, which involved providing full sets of both printed and non-printed materials (for example, schemes of work, teachers' guide, AVA, workbook) and school computers, greatly facilitated teaching. In addition, MOE's drive to encourage personal ownership of computers (these were made available at a subsidised rate to all teachers) reportedly resulted in teachers' ready access to a rich source of information, both from school and home.

Other school resource materials, such as transparencies, worksheets, lesson plans and exam papers, supplied by colleagues, 'were useful as they were directly relevant to the syllabus, more interesting and more colourful (for example, comic strips)', 'easily accessible as they were mass-produced', and 'user-friendly enough for pupils to gain more practice' (Mrs Ho, female, 43 years old, 18 years of teaching

experience). As a result, pupils find certain 'Math concepts easy to grasp' and 'enjoy using the resources' (Mr Sim, male, 39 years old, 15 years of teaching experience).

A young interviewee felt that as she had computers at home since she was in primary school, 'What young teachers - like me - would need more is to know how to teach IT lessons', so she hoped that MOE could provide 'more guides and teaching materials to help me to teach different subjects, especially Life Sciences and Interdisciplinary Project Work' (Ms Wong, female, 25 years old, 2 years of teaching experience).

Interviewees also stated their preferences for activities to be scheduled on an 'on-going basis during term time or weekends'. One suggested, 'Courses should be regular and well spread out ... like taking the half Saturdays to do training or maybe the beginning and ending weeks of the long holidays and leave our holidays untouched for us to recuperate' (Mr Poon, male, 39 years old, 18 years of teaching experience).

During the interviews, teachers also indicated that training venues 'should be as near as possible to schools to save on transport costs and time' (Mrs Lim, female, 52 years old, 30 years of teaching experience). Various venues were also suggested, for example, 'hotels, country clubs occasionally, to relax for a change' (Miss Lee, female, 50 years old, 25 years of teaching experience).

These findings support those of Wood, McQuarrie and Thompson (1982) that teachers prefer training that is on-going, well structured and conducted at appropriate

points in time. Others (Collins, 1981; Swenson, 1981; Korinek, Schmid & McAdams, 1985; Wu, 1987) recommended that CPD be placed as close to the actual site of teaching as possible, such as the school or even in different venues as a special treat.

Released time and the location of staff training were considered important because of the busy schedule of teachers. As elaborated by one teacher, 'If courses fall during curriculum time, for example, the morning teachers should go off earlier to eat, then attend courses which usually start at 2.00 pm. The afternoon teachers can come in half an hour later, as most courses finish at 12.00 pm or 12.30 pm, so they don't have to rush. This type of released time is important, especially if the venues are far from school and if teachers take buses. This way, teachers will not feel stressed, and this is important as stress can kill all interest in training' (Mdm Lee, female, 29 years old, 8 years of teaching experience).

Besides, 'If courses are held in schools, teachers teaching in afternoon sessions wouldn't have to travel to another venue which could be far away from school. In saving travelling time, teachers' energy can be saved. Also, teachers can feel more at home.....it is very convenient. If activities are conducted outside, the venue should be accessible. Even campsites are favourable sites in allowing us to feel close to nature. For a change of environment, hotels and country clubs are hot favourites to give us a conducive and comfortable learning environment' (Ms Ang, female, 27 years old, 3 years of teaching experience).

In short, interviews confirmed that the general opinion was that teachers preferred training that was held in 'the school itself' for many pragmatic reasons such

as 'convenience', saving time and cost, as 'travelling from place to place can be very exhausting'. The same results were reported by Burden and Wallace (1983) who concluded that training must be school-based, and by Caldwell (1986) who found that released time must be given to teachers to share their expertise and experience.

Finally, teachers felt that there must be 'tangible recognition and incentives, like praise, promotions, even awards with increments for young teachers who are ambitious and who want to climb up the leadership ladder, especially for young male teachers - then they will go for further training' (Mr Ho, 52 years old, 31 years of teaching experience).

Summary

As a whole, all groups of teachers perceived Principals as least helpful. Colleagues were perceived to be most helpful, followed by Leaders and School Resources. These findings point to Singapore teachers indicating that they might be more influenced by leadership factors and a peer supportive environment. In particular, male teachers appeared to appreciate Colleagues and Leaders more than female teachers, indicating that male teachers might be even more influenced by these two social groups. All teachers considered the availability of School Resources as significant in influencing their CPD involvement.

This finding is useful as the appreciation of school factors such as the importance of the Role of Principals, the helpfulness of Colleagues and Leaders and the usefulness of School Resources, has serious implications for successful CPD for Singapore teachers.

Table 8: Perceptions of CPD Factors by Whole Group, Age, Years of Experience and Gender (n=310)

CPD ACTIVITIES	Whole Group		Age Group								Experience										Gender			
			20 to 30		31 to 40		41 to 50		51 to 60		1 to 3		4 to 10		11 to 20		21 to 39		>40		M		F	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Formal Activities[1]	2.70	0.59	2.82	0.58	2.98	0.60	3.09	0.54	3.00	0.59	2.85	0.57	2.91	0.63	2.93	0.54	3.02	0.60	3.22	0.40	2.70	0.59	2.99	0.58
Informal Activities[2]	2.62	0.66	2.73	0.53	2.80	0.61	2.69	0.69	2.72	0.67	2.79	0.48	2.73	0.61	2.72	0.61	2.73	0.68	2.82	0.56	2.62	0.66	2.77	0.59
Nonformal Activities[3]	1.96	0.64	2.03	0.64	2.10	0.66	2.01	0.60	2.11	0.67	2.00	0.62	2.03	0.64	2.17	0.70	2.09	0.66	2.29	0.71	1.96	0.64	2.10	0.65
Self-Directed Activities[4]	2.59	0.64	2.96	0.53	2.93	0.58	2.77	0.66	2.80	0.63	2.93	0.55	2.92	0.57	3.02	0.54	2.77	0.64	2.89	0.59	2.59	0.64	2.96	0.57

Mid-point=2.5

Legend:

[1] Formal Activities include sitting in normal school staff meetings; school-based workshops; in-service workshops to listen to speakers.

[2] Informal Activities include self-chosen improvement activities such as observing demonstration lessons; getting feedback from observations of teaching; working at level meetings to set, vet and mark test papers; presentation of theory or description of new skills; opportunities for practice after learning new strategies; viewing video tapes; opportunities to share experiences and expertise; focused support groups (study groups); peer discussions with observations and coaching; simulations or role plays; learning circles, that is, identify, investigate and report on a school-related problem or area of special interest; mentoring and quality learning circles using WITs tools.

[3] Nonformal Activities include attending meetings as committee members, workshops and conferences; carrying out action research in the classroom, that is, identify and analyse problems and gather, interpret and evaluate information; reflecting continuously on teaching methodologies; constantly finding better ways of teaching, experimenting with new approaches, innovations to improve teaching; presenting at conferences.

[4] Self-Directed Activities include reading professional journals, writing, and reviewing textbooks and journals; observing other teachers teaching and giving feedback; attending Open University or Masters courses.

c) Perceptions of CPD Factors

Table 8 shows the means and standard deviations on the four CPD activities: Formal Activities, Informal Activities, Nonformal Activities and Self-Directed Activities.

By Whole Group

The means in Table 8 show that teachers did not attend all kinds of activities equally ($F(3, 927) = 210.87$, $p < .01$): they were more inclined to attend Formal Activities that are school or needs related and management supported. This is understandable since Singapore teachers are required to attend Formal Activities such as the three core modules (Basic Counselling Course, Grammar Course, Relating Well With Parents Course), besides normal school staff meetings, school-based workshops and in-service workshops on school instructional and curricular issues.

Even then, the findings revealed that for Formal Activities (M=2.70; SD=0.59) the mean is still less than 3 which is much lower than the possible highest value of 4. Several reasons are possible. First, in Singapore, new teachers might not have the opportunity to attend core modules organized by MOE. Secondly, new teachers posted in might not have attended training in their previous schools. Thirdly, teachers holding diplomas or degrees equivalent to the required core modules are exempted from these core modules.

Teachers gave fairly even scores to both Informal Activities (M=2.62; SD=0.66) and Self-Directed Activities (M=2.59; SD=0.64). The findings revealed

that teachers were least likely to be engaged in Nonformal Activities (M=1.96; SD=0.64) that are largely self-initiated to upgrade themselves.

By Age Groups

As teachers grew older, they seemed to be more interested in Formal Activities and less interested in Self-Directed Activities that are self-chosen. One possible reason could be that besides being management supported, Formal Activities are lecture style in nature and require minimum participation, so older teachers might be more comfortable with these activities (Mrs Lim, female, 52 years old, 30 years of teaching experience, p112). Furthermore, they might not think they need to upgrade themselves through Open University and Masters courses (Mr Fong, male, 50 years old, 26 years of teaching experience, p113), as compared to youngest group of teachers (20-30 years old) who appeared to be keenly involved in Self-Directed Activities (M=2.96; SD=0.53), followed by Formal Activities (M=2.82; SD=0.58).

All groups rated Informal Activities second last in popularity (Ms Wong, female, 25 years old, 2 years of teaching experience, p112), and Nonformal Activities that required more active participation and higher academic work as least popular (below the mid-point of 2.5; Ms Sun, female, 38 years old, 13 years of teaching experience, p113).

By Years of Teaching Experience

A similar trend appeared in results for teachers by years of teaching experience in their involvement in the four types of activities. Again less experienced teachers (<20 years of teaching experience) showed keen interest in Self-Directed

Activities, followed by Formal Activities as compared to older teachers (>20 years of teaching experience) who ranked Formal Activities above Self-Directed Activities. Again all groups ranked Informal Activities second last and Nonformal Activities last in popularity.

By Gender

As shown in Table 9, female teachers are more active in attending all four types of CPD activities than male teachers:

Table 9: Differences between Participation in CPD Activities between Male and Female Teachers

CPD Activities	Male	Female	Difference
Formal	**2.70**	**2.99**	**0.29**
Informal	**2.62**	**2.77**	**0.15**
Nonformal	**1.96**	**2.10**	**0.14**
Self-Directed	**2.96**	**2.59**	**0.37**

The differences are highest for Self-Directed and Formal Activities. During the interviews, female teachers expressed that they were more driven to attend both these activities such as attending Open University, to attain additional qualifications (Ms Su, female, 30 years old, 7 years of teaching experience, p112). They were also more inclined to attend Formal activities that are school-based as they save time travelling (Mrs Lim, female, 52 years old, 30 years of teaching experience, p112). Male teachers explained that they were less likely to attend CPD than their counterparts, as they were more confident and had stronger survival skills (Mr Lam, male, 28 years old, 2 years of teaching experience, p90).

Interview Findings

The interviews helped to explain the findings. For example, on female teachers' popularity of Formal Activities, this female interviewee clarified that 'such activities are ranked high as these are organized by schools, held in schools and do not really require a lot of follow-up. We save time travelling. We are used to listening to speakers. The activities are quite passive and as we grow older, we become less active too, so we prefer to listen than to do' (Mrs Lim, female, 52 years old, 30 years of teaching experience).

A young teacher shed light on the preference of less experienced and young teachers for Self-Directed Activities. She explained, 'We like to read professional journals such as the "Math Teacher" or "The Reading Teacher" to get ideas. We also like to observe teachers and give feedback because that way we learn why certain strategies are used. Some of us write and review textbooks during our free time, and we are paid for these jobs. There are three of us in this school who are attending Open University to get a degree and it's really exhausting' (Ms Su, female, 30 years old, 7 years of teaching experience).

Although Informal Activities are intended to foster a community spirit and to be relaxing, teachers articulated that these activities were not popular. For example, this interviewee felt 'very stressed'. According to her, one way to fully enjoy such collegial activities was to 'learn how to relax'. Much dreaded too, were 'Quality Learning Circles as teachers have to use WITs tools which are time-consuming' (Ms Wong, female, 25 years old, 2 years of teaching experience).

On Nonformal Activities to help teachers grow as experiential, reflective and collaborative learners, another teacher disclosed the reasons for the consistently low ratings by all teachers as, 'Much as teachers would like to use concrete experience, reflect, conceptualise and experiment, very often we stop at conceptualizing. Even so, we do go home to think about (reflect on) our work everyday, like what has gone wrong, what can be improved so that the next day, we will not repeat the same mistakes'. Three main challenges cited included 'time constraints, fatigue and work demands' resulting in teachers feeling 'demoralised, distressed and discouraged' (Ms Sun, female, 38 years old, 13 years of teaching experience).

One teacher tried to explain the relatively low scores for CPD participation in the three types activities (Self-Directed, Informal and Nonformal) by older and more experienced teachers (41-50 years old; 21-39 years of teaching experience), 'I think it probably boils down to the teachers' motivation. I suppose it depends on the individual. Some people reach a certain age and they probably think, "Aiyah, it's a waste of time, so old already, I am 50 years and still want to ask me to go for training....for example, Open University, action research, present papers....it's a waste of time. But if you're very young....you still have a long way to go...you're aspiring....I think you might have the intrinsic motivation to drive you along to learn more skills to keep yourself on the job...' (Mr Fong, male, 50 years old, 26 years of teaching experience).

In addition to these reasons, one must realize that as a whole, teachers at primary school level are more likely to be practitioners rather than researchers and hence they may be expected to participate in skills-based workshops rather than to

engage in research-based activities. The findings point to a need to structure such activities at the teachers' level because when teachers reflect and integrate their experiences with research-based knowledge as reflective practitioners (Simmon & Sparks, 1987); experiment and draw on their past experiences and apply their skills to relevant practice as experiential learners (Brookfield, 1986); and build strong interlocking relationships with student and parents, they will be able to produce a nurturing environment for their pupils (Bellanca, 1995).

Summary

As a whole, all groups of teachers preferred Formal Activities, followed by Informal Activities, Self-Directed Activities and last Nonformal Activities. The youngest and less experienced teachers showed keener interest in Self-Directed Activities. Female teachers appeared to be more involved than male teachers in all types of CPD activities, in particular Self-Directed Activities.

Summary

In sum, the results in this section show that firstly, Singapore teachers did not feel very keen needs to learn new classroom teaching skills to cope with changes in the education system, although there were expressed views that they desired other skills such as perceptual skills, to keep up to date with pedagogy, to remain relevant and to sustain the change with its oncoming initiatives. Indeed, their perceptions of personal needs decreased with age and years of experience. The smallest difference was by gender. Secondly, female teachers who were more likely to perceive needs for skills than male teachers, were also more likely to be involved in CPD activities.

Thirdly, the higher means on external factors indicated that teachers were more positive towards school factors. Of these school factors, the Role of Principals could be enhanced. Fourthly, on CPD factors, most teachers were more likely to engage in Formal Activities, except for young, less experienced and female teachers who preferred Self-Directed Activities.

One may conclude that needs related, job relevant, freely chosen and management-supported CPD (reinforced by the quality of leadership, support from Colleagues and availability of School Resources) is the best way forward to meet teachers' needs for CPD for personal and school effectiveness.

Section Two: Relationship between Different Types of CPD Activities and Personal and School Factors

In Chapter Two, a model for describing the relationships among CPD activities and the relevant factors was proposed. Basically, there are three parts in the model: CPD activities, and the related extrinsic factors and intrinsic factors. As reported in Chapter Three, CPD activities were measured by the scales of Academic Development (Formal and Informal) and Professional Development Activities (Nonformal and Self-Directed); external or school factors were measured by the scales: Role of Principals, Leaders, Colleagues, and School Resources; while the intrinsic or personal factors were measured by teachers' perceptions of their needs by age groups, years of teaching experience and gender. One main goal of the present study was to test the hypotheses in the model and to find the relationship between CPD activities and other potentially related factors. This section presents statistical

results obtained from Correlation, Multiple Regression Analysis, MANOVA and ANOVA used to test the hypotheses in the model.

Relationship between CPD Activities and Other Variables

In all the measurements, except the variables measured by ordinal scales such as years of teaching experience and age groups of teachers, or the nominal scale, such as gender, the relationship between any of the CPD activities and any of the potentially related factors was shown by the correlation coefficients between them.

Table 10 shows the correlations between four factors of CPD activities and the variables of personal factors and the school variables.

Table 10: Correlations between CPD Activities and Other Variables (n = 310)

	Informal	Formal	Nonformal	Self-Directed
Planning Skills	**-.107**	**.040**	**.098**	**-.010**
Managing Skills	**-.116***	**.073**	**.027**	**-.036**
Instructional Techniques Skills	**-.086**	**.076**	**.024**	**-.041**
Interactional Skills	**-.058**	**.107**	**-.015**	**-.060**
Assessing Skills	**-.096**	**.078**	**.072**	**-.042**
Relations with Community Skills	**-.102**	**.028**	**.051**	**-.061**
Leaders	**.449****	**.425****	**.247****	**.255****
Colleagues	**.278****	**.358****	**.166****	**.226****
Resources	**.507****	**.570****	**.204****	**.188****
Role of Principals	**.259****	**.250****	**.437****	**.341****

***p < .05, ** p < .01**

Several key findings deserve to be highlighted. One, there was no significant correlation between needs (internal factors) and the CPD activities. Instead, significant correlations were found between school variables (external factors). Furthermore, among the school factors, there were higher significant correlations between Leaders and Informal and Formal Activities and between the Role of

Principals and Nonformal Activities. The correlations were also higher for School Resources and between Formal and Informal Activities.

The findings suggest that teachers perceived that they would participate in Informal and Formal Activities, planned and directed by Leaders (Mrs Lim, female, 52 years old, 30 years of teaching experience, p112; Mr Lam, male, 28 years old, 2 years of teaching experience, p90). Similarly, they would attend Nonformal Activities when the Principals were more involved (Ms Wong, female, 25 years old, 2 years of teaching experience, p112). It appears too, that School Resources were adequate to meet teachers' needs (see Interviews p98-107). The results make sense as Formal Activities are conducted in schools and normally materials and teaching guides are provided. Besides, when teachers need resources for Informal Activities, these are readily available from their school leaders.

a) Relationship between CPD Activities and Personal Factors (Needs or Skills)

Table 10 shows low correlation coefficients between teachers' CPD activities and their perceptions about their needs in developing skills. Indeed, the highest and the only significant value is negative .116 (between Managing Skills and Informal Activities), indicating that even when teachers felt the need to develop their Managing Skills, they were not likely to attend Informal Activities owing to 'time constraints' and 'feeling stressed' with a heavy workload. From the value of the correlation, we can say that the variance shared by these two variables was slightly more than 1%. The rest of the correlations between any activities and the needs were lower than .10.

In general, the results showed no meaningful relationship between teachers' CPD activities and their perceptions about their needs in developing different skills. This implies that regardless of teachers' perceptions about their needs to develop different skills, they would not attend CPD activities to fulfil their needs.

This result is significant in that it runs contrary to the prevailing notion that when teachers feel the need to develop their skills, they would actively pursue related activities to address these needs. Some researchers have in fact argued that 'most teachers engage in CPD because they want to become better teachers' (Guskey, 1986). For example, Wideen and Andrews (1987) reported that teachers can be prime movers in the process of change, having needs and aspirations from which they act out their approaches to their work and Diegmueller (1991) reported that when teachers desire training, especially when they bring their whole beings into the picture, they will attend the training program actively and CPD becomes effective.

Instead, the results in the present study showed that teachers' needs were not related to any type of CPD activities. This is interesting as teachers had earlier reported during interviews that they had professed needs and desired training to fit in with changes in the education system.

Several reasons drawn from interviews can explain this finding (p119-124). One explanation is that whilst Singapore teachers acknowledged their needs to develop their skills to manage change and even saw themselves as change agents, they felt that currently, they could cope well enough with the changes. Therefore, although there were expressed needs, they did not appear to want to attend training

actively (Mr Tham, male, 51 years old, 30 years of teaching experience, p90). A second explanation is that the training programs or courses provided by schools and Ministry of Education did not match their needs (Ms Wong, female, 25 years old, 2 years of teaching, p120). A third explanation is that these courses were designed to meet school needs rather than individual needs (Mr Fong, male, 54 years old, 32 years of teaching experience, p122). A fourth explanation is that the courses offered were mandatory, adhoc, and lacking in follow up and support (Mr Yap, male, 28 years old, 2 ½ years of teaching experience, p120). Lastly, teachers might have been given a limited choice in the selection of topics (Mrs Ho, female, 43 years old, 18 years of teaching experience, p 121).

Similar explanations have been proposed in other studies. For example, Morant (1981) and Hewton (1988) found that there was often a mismatch between teachers' needs and course content. After attending a course, teachers were often unable to apply the knowledge and skills that they had acquired from the course. Other researchers (LaRose, 1988; Koll, Herzog & Burke, 1989) have also pointed out that effective CPD programmes must serve two basic functions, to meet individual teacher's needs as well as school needs. Fullan (1982) too suggested that one-shot workshops that were enforced with no follow up, were bound to fail.

Interview Findings

During the interviews, teachers supported most of these explanations. One of the most common explanation was the need to be pragmatic owing to a mismatch of courses. One teacher reiterated another (p93) that 'if we can get by with the new initiatives, we will not go for training which is time consuming. The younger ones

will need help so they will attend more training. Also, one main problem is that the types of courses offered are not relevant or suitable for different teachers, as all our needs are different' (Ms Wong, female, 25 years old, 2 years of teaching experience).

Another teacher offered to explain the low interest in CPD activities, 'Courses given to us are really dull and uninteresting....the speakers are poor, boring, no charisma....always the same style...lectures, a bit of hands-on work, presentations. Moreover, these courses are either too costly, poorly co-ordinated or lack variety and forms' (Mr Liew, male, 30 years old, 3 years of teaching experience).

Teachers felt that even if they did consider the training courses useful, they 'could not implement the new skills or strategies learnt from these training programs owing to time constraints and lack of support' (Mr Yap, 28 years old, 2 1/2 years of teaching experience). The result is that teachers' interest decreased, at the same time as commitment, in attending these types of training programmes actively.

Although some welcomed the 'free training', there was no evidence that training was planned or that teachers were allowed to select their own training. One teacher cited, 'we will go for training if it is interesting and if we can select our own courses or workshops. Right now, we feel forced to attend as we are often told to apply for courses that meet school needs, for example, the MOE core modules. We cannot select courses that are interesting or are closely linked to our day-to-day teaching. Some courses are adhoc, for example, we are given tickets to go on a Saturday morning seminar that is very costly. The speakers are flown in, but when

you go there, you see teachers marking, talking and walking out halfway. What a big waste of money' (Mr Yap, male, 28 years old, 2 1/2 years of teaching experience).

Added another, 'Even if we are allowed to choose our own courses, we may not necessarily get a place in the workshop. Sometimes, when we sign up for courses that are interesting or suitable, it's always either too late because the TRAISI system (MOE training data base) has jammed up and we cannot key in the courses. So by the time you can get in to apply, the places are already filled up. Worse still, we are sometimes told that the courses we want to apply are too expensive and that the school has not budgeted for the training. In the end, we just attend any training so that we can meet the 100 hours of training. If we don't do that, we will be called up to explain why we have not met our training hours. So really, it's quite frustrating' (Mrs Ho, female, 43 years old, 18 years of teaching experience).

Another plausible explanation is that Singapore teachers had been too busy with their teaching duties, so they did not have time really to attend, or even to think and plan any CPD activities to fulfil their own needs for development. Interviews confirmed these arguments. As mentioned above, Singapore primary school teachers teach about 40 periods every week. Most of them spend more than 8 hours in schools every day and after school they have to mark assignments and prepare their lessons for the next day. On Saturdays, they are required to attend meetings and training to fulfil the 100 hours of training.

Many teachers described themselves as '24-hour teachers'. They expressed that they felt 'exhausted after carrying out multiple duties' (Mr Chan, male, 57 years old,

41 years of teaching experience). As a result, many felt 'tired and had little social life, generally in the earlier years of their teaching career' (Mdm Liew, female, 56 years old, 36 years of teaching experience). All they could think of was to 'go home, get some rest and have some family time' (Mrs Lim, female, 52 years old, 30 years of teaching experience). The situation was worse for those who were given a heavy workload, 'especially for those who had to teach three levels'. Hence they were 'resistant' to having to attend 'courses that were in some ways prescribed for them and which lacked follow-through, for example, the Grammar courses' (Mr Fong, male, 54 years old, 32 years of teaching experience).

Teachers expressed a strong need for 'more time', and if possible 'released time' to attend training so as to establish themselves as 'professionals' and 'real' teachers. This confirmed the conclusion of previous researchers that providing released time helps teachers to balance time between school and family life (McLaughlin & Berman, 1977).

Some teachers even suggested that they 'should be paid to attend training' and that 'certificates of appreciation, promotion, and monetary rewards' would inspire them to attend more training. This supports the conclusion of other researchers (for example, Wood & Thompson, 1980, 1993; Sparks, 1985; Wu, 1987) that tangible benefits such as recognition and awards for deserving teachers have often been more successful motivators.

Yet another reason for the low correlation between teachers' felt needs and their participation in CPD activities was disclosed by this teacher, 'Goals are not

clearly defined. There are no clear statements of what the school is trying to achieve, although there are banners all over the school. We are left to find out about things. We pick up things through trial and error. To get really involved in the process and implementation of change, we should think of one another as resources, learn by sharing our successes and failures with one another and change our practices to improve student performance – which is not quite happening now' (Mr Fong, male, 54 years old, 32 years of teaching experience).

It would appear that the current CPD programmes lacked clearly articulated goals that would enable teachers to acquire a repertoire of effective teaching behaviours, especially for young and beginning teachers. For example, CPD programmes 'did not provide structured activities such as a planned induction programme to assist new teachers in making adjustments to teaching'. Instead, inductive support was provided mainly 'through telephone contact with the school and consisted primarily of a meeting with the Principal who briefed them on the school mission and goals, classes they were to teach, a guided tour round the school compound and an introduction to the staff at the first staff meeting' (Ms Choo, female, 25 years old, 3 years of teaching experience).

All the interviewees considered 'the lack of a handbook on skills' as an unmet need. These findings support the conclusions of Cooke and Pang (1991) who confirmed in a Hong Kong research, the importance of providing beginning teachers with a handbook and underlined the need for a systematically planned school-based induction programme for the untrained and partially trained teachers. One suggestion offered by a teacher was to put in place a 'formal, system-based CPD provision based

on assessment of needs' (Mdm Tham, female, 52 years old, 31 years of teaching experience), a proposal that had been similarly suggested by Leithwood and Montgomery (1986).

Summary

In sum, teachers' perceptions about all the types of CPD activities offered by schools were fairly consistent with the majority feeling that the programme was lacking in variety and forms preferred and needed, with uninteresting speakers, and teachers feeling they were coerced to attend training to meet school needs under the guise of being able to choose freely their own CPD; whereas some were very positive about the help they had received from their colleagues and suggested the provision of an array of activities. The findings lend support to previous research that real growth is more likely to be engendered by a variety of activities that are thoughtfully selected and put together as a sequence of experiences that includes 'follow-up practice, coaching, and peer support' (Rodriguez & Johnstone, 1986, p88). The findings suggested that a strong need to empower staff to actively take collective responsibility in the continuing education of staff within the context of the school, is a strong motivator for teachers to participate in CPD (Fenstermacher & Berliner, 1983, 1985).

b) Relationship Between CPD Activities and School Factors

A significant earlier finding was that Singapore teachers did attend CPD activities, although not keenly. However, the results show that teachers' activities were not related to their expressed needs, that is, to intrinsic factors. The present study identified school factors which were ranked as a whole, as more important

motivators to CPD, compared to personal factors, contrary to results in previous studies that teachers are intrinsically motivated to participate in CPD activities to develop themselves professionally (Fielding & Schalock, 1985; DuFour & Berkey, 1995).

The results in Table 10 show that all four kinds of teachers' CPD activities were positively related to all the scales of external or school variables, namely, Leaders, Colleagues, Role of Principals, and School Resources. These significantly positive correlations clearly showed that Singapore teachers attended CPD activities actively related to their perceptions about the school environment, that is, external or extrinsic factors.

It must be noted that the correlation coefficients reflected in Table 10 show that all the school (external) factors were related to all the different CPD activities. However, from these correlation coefficients, it was impossible to determine whether these extrinsic variables were all independently related to the activities, or to determine exactly which extrinsic factor was most importantly related to teachers' Academic Development Activities (Formal and Informal Activities) or Professional Development Activities (Nonformal and Self-Directed), or to find out exactly how much variance any two variables really shared. This is because all these correlations and variance between two variables overlapped with other correlations and variance.

For example, between the scale of Formal Activities and the scale of Informal Activities, a significantly positive correlation was found ($r = .704$, $p < .01$). The correlation coefficient showed that if a teacher was involved in Formal Activities

more frequently, then he/she would be more involved in Informal Activities as well. However, the significant correlations between any of the extrinsic factors and one of Formal Activities could be partially obtained from the significant correlation of Formal Activities and Informal Activities.

Among any CPD activities and any of the four extrinsic factors, the overlaps of these correlations would make the story more complicated: these variables were all significantly correlated and shared some common variance. To solve this problem of showing which extrinsic variable was really related to one of the CPD activities and to show which variable was more important to the CPD activities, Multiple Regression tests were carried out.

In the Multiple Regression results, the beta value provided an index for the importance of each variable and semi-partial correlation (part correlation), removed all the shared variance and provided the pure relationship between two variables (Tabachnick & Fidell, 1996). Tables 11 to 14 show corresponding Multiple Regression results when Nonformal Activities, Self-Directed Activities, Formal Activities and Informal Activities were treated as dependent variables and the other three kinds of CPD activities and the four extrinsic factors were treated as independent variables.

Table 11: Multiple Regression Results for Nonformal Activities (n=310)

	Nonformal Activities			
	T	P	Beta	Semi-partial
Leaders	.36	n.s.	.032	.017
Colleagues	-.38	n.s.	-.022	-.018
School Resources	1.50	n.s.	.090	.072
Role of Principals	5.74	.000	.310	.274
Self-Directed Activities	6.08	.000	.320	.290
Formal Activities	-1.58	n.s.	-.112	-.076
Informal Activities	1.70	n.s.	.126	.081

Table 12: Multiple Regression Results for Self-Directed Activities (n=310)

	Self-Directed Activities			
	T	P	Beta	Semi-partial
Leaders	-.10	n.s.	-.007	-.005
Colleagues	1.54	n.s.	.093	.076
School Resources	-.28	n.s.	-.017	-.014
Role of Principals	2.21	.028	.129	.109
Nonformal Activities	6.08	.000	.341	.300
Formal Activities	1.51	n.s.	.110	.074
Informal Activities	.98	n.s.	.075	.048

Table 13: Multiple Regression Results for Formal Activities (n=310)

	Formal Activities			
	T	p	Beta	Semi-partial
Leaders	3.55	.000	.148	.138
Colleagues	-1.62	n.s.	-.077	-.063
School Resources	2.86	.004	.138	.111
Role of Principals	1.22	n.s.	.056	.047
Self-Directed Activities	1.51	n.s.	.068	.058
Nonformal Activities	-1.58	n.s.	-.074	-.061
Informal Activities	11.03	.000	.561	.428

Table 14: Multiple Regression Results for Informal Activities (n=310)

	Informal Activities			
	t	p	Beta	Semi-partial
Leaders	.04	n.s.	.002	.001
Colleagues	2.74	.007	.123	.101
School Resource	5.70	.000	.252	.211
Role of Principals	.30	n.s.	.013	.011
Self-Directed Activities	.98	n.s.	.042	.036
Nonformal Activities	1.70	n.s.	.076	.063
Formal Activities	11.03	.000	.512	.409

Multiple Regression results reported in Tables 11 to 14 provided a different story from the correlation coefficients reported in Table 10. In Table 10, the

correlation coefficients between any extrinsic or school factors and any teachers' CPD activities were all significant. As mentioned previously, the results seemed to suggest that all activities were related to the school factors. However, results in Tables 11 to 14 showed that not every of the school factors was significantly related to the activities: different activities were significantly related to different school factors.

Tables 11 and 12 showed that the two activities: Nonformal Activities and Self-Directed Activities, were significantly related in the regression model when the other factors were controlled. The semi-partial correlation, which showed the independent correlation between them, is about .30. This means that these two activities shared about 9% of the variance. The results from Multiple Regression showed different correlation patterns. The results revealed that not all CPD activities were highly correlated. For example, in calculating Pearson's correlations among these activities, significant correlations were found between Nonformal Activities and both Formal Activities ($r = .195$, $p < .01$) and Informal Activities ($r = .273$, $p < .01$). The regression analysis data showed that when the overlapped covariance was removed, these correlations were not significant. On the other hand, the significance of correlation between Nonformal Activities and Self-Directed Activities in the regression analysis indirectly proved the results from factor analysis: these two factors in an orthogonal relationship, they are not the same but are correlated.

- Relationship Between CPD Activities and the Role of Principals

The regression analysis results also show that these Nonformal Activities and Self-Directed Activities were only significantly correlated to one school factor, the

Role of Principals, and not the other school variables. This means that when teachers perceived that their Principals played an active role in encouraging and supporting their work, they would attend Nonformal Activities such as attending meetings as committee members, workshops and conferences; carrying out action research in the classroom, that is, identify and analyse problems and gather, interpret and evaluate information; reflecting continuously on teaching methodologies; constantly finding better ways of teaching, experimenting with new approaches, innovations to improve teaching and presenting at conferences, in schools more often. They would also engage in Self-Directed Activities such as reading professional journals, writing, and reviewing textbooks and journals; observing other teachers teaching and giving feedback and attending Open University or Masters courses, more frequently. In this way, they would grow as self-directed, reflective, collaborative and experiential learners.

It is clear that as a leader, Principals played a very important role in how actively teachers participate in both Nonformal and Self-Directed Activities. This finding is disturbing as it shows low self-dependence even for self-reliant and self-chosen activities. Concurrently, other School People or School Resources did not play such an important role in these two activities.

One of the possible explanations for the results is that both types of activities are not formally required of teachers in general. In schools, these self-directed, reflective, collaborative or experiential activities are self-initiated and taken on independently by individuals to upgrade themselves out of personal interest or drive. They also require a higher level of commitment, intellectual capacity and the

essential qualifications. Such teachers are likely to attend self-directed courses at the Open University, engage in local or distance courses such as Masters or Doctoral degrees or lead in presentations at conferences. As these activities are not requisites within a teacher's job scope in Singapore primary schools, only highly motivated and aspiring teachers would be interested in them (Ms Su, female, 30 years old, 7 years of teaching experience, p112; Mr Chan, male, 29 years old, 4 years of teaching experience, p131).

Another reason is obvious. These are two activities that require higher order academic skills, are job-related and need long-term commitment. This implies that to pursue such types of training, teachers will need Principals' support (Mr Chan, male, 29 years old, 4 years of teaching experience, p131). According to Weick (1979), Principals are critical reality definers. They are the glue in bringing about teachers' satisfaction in their own development, in providing support mechanisms such as released time and in increasing their confidence.

Tables 13 and 14 show some similarities and differences compared to the correlation pattern shown in Tables 11 and 12. The similarities are that the two activities, Formal and Informal Activities were significantly correlated and that these two activities were not correlated with either Nonformal Activities or Self-Directed Activities. Also, the results did not show any significant relationship with all school factors. The differences are that Formal Activities and Informal Activities were not significantly correlated to the Role of Principals but were significantly correlated to other factors.

Interview Findings

These results were confirmed by several interviewees. Some interviewees agreed that Principals' support for Nonformal and Self-Directed Activities were indeed more important than for other CPD activities. Interviewees, attending Self-Directed Activities such as the Open University, voiced out that these higher level academic activities are 'consuming and exhausting and unless support is rendered in forms such as reducing teachers' workload, giving Saturdays off, or giving released time, it is highly likely that only some of younger aspirants will want to participate (Mr Chan, male, 29 years old, 4 years of teaching experience).

The same interviewee, pursuing a Masters Course, felt that 'Principals should facilitate this kind of self learning and development so that teachers can see the importance of continuous learning and upgrading. When teachers perceive that this kind of learning is important and that it helps them with their job or that they can get promotions faster, they will go for it. Principals need to explain to teachers to help them to appreciate the value of writing articles, reading journals, doing research work, studying the concepts of setting up a learning organization so that teachers understand how this can benefit themselves and their pupils'.

Of Principals, one young interviewee remarked: 'Principals must motivate teachers to participate in Nonformal (thinking) Activities, like being involved in Quality Learning Circles and even make this kind of dreaded learning, fun and meaningful' (Ms Wong, female, 25 years old, 2 years of teaching experience).

One other added, 'Yes, teachers themselves actually must feel that they want

to upgrade themselves, to be better and more effective teachers, then the motivation will come. So Principals can be more encouraging' (Mr Gwee, male, 45 years old, 28 years of teaching experience).

In the Singapore context, it is clear that Principals play a key role in determining teachers' career development. Together with Vice-Principals and HODS, they are in the position to rank and decide on individual teacher's promotion, annual salary increase and career path. When teachers perform above expectations and meet expectations of their training activities, they stand a good chance of getting promoted to key positions and to obtain a higher salary scale.

Thus, when Principals provide active leadership, lend more support and show more interest in teachers' development and are involved in activities such as setting up a structure for a systemic CPD plan, working at establishing a positive school climate for continuous learning, assuming leadership through interclass visitations, peer coaching, demonstration, feedback and follow up, and having an annual plan for teachers' CPD, then teachers will be more likely to participate in Nonformal and Self-Directed Activities. Several researchers (Goodlad, 1984; Goldring & Rollis, 1993; Ashton, 1984; Bishop, 1987) also confirmed that such kinds of support for teachers' CPD are crucial for the maintenance of motivation after the initial learning episodes.

- Relationship between CPD Activities and Colleagues

It is not surprising to find that Informal Activities were significantly related to the Colleagues and School Resources factors. These Informal Activities include activities that require other colleagues' support and communication and possibly

sharing of teaching materials. Without other colleagues' involvement, some of these Informal Activities, for example, observing demonstration lessons, obtaining feedback from observations of teaching, sharing experiences and expertise and attending study groups, cannot be carried out.

Interview Findings

Teachers' responses during interviews revealed that 'lack of time' was a major challenge in their participation in Informal Activities. However, teachers recognised the benefits of such relationships accordingly as they, 'think of each other as partners-in-education, work as a team, share various needs, give each other reminders on matters that are of importance' (Mrs Ho, female, 43 years old, 18 years of teaching experience). One element of support considered by teachers as particularly helpful, cited by a new teacher was, 'in providing innovative ideas, useful tips on teaching strategies and resources to achieve instructional objectives' (Mr Lam, male, 28 years old, 2 years of teaching experience).

Teachers explained that help came indirectly as teachers gained from 'the friendly and open interaction and sharing of experiences, ideas and materials' and they could directly 'translate these benefits' to their pupils. The opportunity to work collaboratively as a team was considered an important means to help them to develop personal qualities such as 'patience and tolerance' and for 'teachers with common interests to form on-going peer support groups to help each other and to mentor younger teachers'. This in turn would result in 'increased professional competence in terms of teaching methodology'. Briefly, such collaborative activities formed voluntarily helped them to readily expand their 'repertoire of teaching behaviours,

develop teaching behaviours as adults and use specific interventions and learning plans to meet both individual and group needs', thus enhancing their own learning behaviours.

The findings correspond with literature findings (Odell, 1986) that collecting, disseminating, or locating materials or other resources for use, especially by new teachers were considered as forms of support. The findings also lend support to studies that report the impact of individual learning plans and collaborative activities on teachers as adult learners (Mizruchi, 1983; Schon, 1983; Senge, 1990; Glickman, Allen & Lunsford, 1994). All these data support findings in many other studies that CPD efforts are most successful where a norm of collegiality and experimentation exists (Little, 1981a,b, 1985a,b; Roy & O'Brien, 1991).

The benefits of these types of CPD activities may in part be explained by the subtle yet powerful interactions among teachers during activities as adult learners, as described by various researchers (Schon, 1983; Glickman, 1985; Tracy & Schuttenberg, 1990; Conway, 1990; Thomas, 1992; Wood & Thompson, 1993). Passion is sustained as teachers feel inspired to 'identify common problems', to 'personally experience what others are doing and learn from their mistakes', to 'tap from each others' experiences', to 'exchange ideas', to 'be aware of problems and to find ways to solve them', to 'reflect on teaching effectiveness', to 'develop new insights so as to be more focused and even to rejuvenate and support each other', confirming similar findings by Cross (1981) and Rogers (1987). In all, these activities and interactions can 'significantly contribute to teachers' growth as adult learners and as change agents'.

➢ Relationship Between CPD Activities, Leaders and School Resources

Interestingly, results in Tables 11 and 12 show that Formal Activities were significantly related to the two factors: Leaders and School Resources, whereas Informal Activities were significantly related to these two factors: Colleagues and School Resources.

Multiple Regression results showed that School Resources were significant for Informal Activities as, in particular, school resource materials could be borrowed from Colleagues during Informal Activities. Results revealed that although teachers found School Resources adequate, when schools provided better School Resources, for example, closer proximity of training venue to school, suitable timing, and availability of a wider selection of various types of resources, teachers would be more inclined to participate in CPD.

A re-check of all the original items related to Formal and Informal Activities showed that these activities were related to School Resources. As mentioned earlier, almost all Formal Activities were conducted in schools, so teachers need not travel unnecessarily, thus saving time. Moreover, these activities are scheduled to suit teachers' time.

Interview Findings

Importantly, during interviews, teachers generally agreed that whilst formal courses provided the 'content and exposed them to the new MOE initiatives, they are in fact quite superficial, and might not be relevant or specific enough to meet our needs. They can be improved and made even better, if they are more creative and

customized to meet our needs. The good thing though, is that school-based workshops not only save time and transport cost but also reduce stress caused by travelling' (Mr Fong, male, 54 years old, 32 years of teaching experience).

Interviews established that it is not difficult to understand that Formal Activities and Leaders were related significantly, since Leaders usually organized these Formal Activities. They would also check and monitor teachers' attendance at courses. It makes sense therefore, that when Leaders called for such meetings and focus group discussions, teachers would participate. Likewise, when Leaders did not call for such meetings, teachers would not participate. Consequently, Formal Activities were not attended by teachers all the time.

The findings make sense, as when Leaders (Principals and Vice-Principals, HODs) and Colleagues (Level Coordinators, Experienced Teachers and Peers) in schools are engaged in CPD and when School Resources such as teaching materials, are made available, then teachers will be more motivated to participate in CPD activities.

Teachers provided details on their appreciation for School Resources. They expressed that informal opportunities such as staff dinners, gatherings and outings were opportunities for them to interact informally with the rest of the staff and to share materials as they felt less inhibited to discuss their problems. Such sessions were described as 'sources for exchange of ideas', 'mind stimulators' and 'morale boosters that provide multiple benefits'.

Teachers again reiterated the need for venues to be as close to schools as possible (Swenson, 1981; Wood, McQuarrie & Thompson, 1982; Korinek, Schmid & McAdams, 1985; Wu, 1987) and expressed their strong preference for activities to be 'well spread out' over a period of time (Sparks & Loucks-Horsley, 1989; Pasch & Harberts, 1992; Dechant, Marsick & Kasl, 1993). Several reasons were provided. First, 'a sense of teamwork and collegiality is bound to develop when the same people join together for a common purpose over an extended period of time. The outcomes include sharing of concerns, group-generated solutions to instructional problems, and the development of professional friendships' (Ms Choo, female, 25 years old, 3 years of teaching experience).

Another reason for preferring the content of workshops to be spread over several sessions was 'to avoid information overload that so often resulted from attending CPD workshops. Since teachers are able to digest and try out only a few new ideas or practices at one time, it would seem more practicable to have several short workshops rather than one or two long ones' (Mrs Ho, female, 43 years old, 18 years of teaching experience).

A third reason for planning several workshops relates to the concept of 'mutual adaptation' (Berman and McLaughlin, 1978). An interviewee confirmed, 'As teachers try out new techniques, they will adapt them to fit their unique teaching situations. In turn, as they experiment with a new way of teaching, their way of thinking about teaching and learning may change. For example, teachers who learn cooperative learning strategies at a workshop may want to try one or two strategies. At the next workshop, they could discuss what they have tried out and how it worked'

(Mr Yap, male, 28 years old, 2 1/2 years of teaching experience). This finding is supported by Simmons and Sparks (1987) who found that by going through the cycle of learning, experimenting, modifying, sharing, and trying again, teachers develop a more proactive and reflective stance to teaching.

Finally, interviewees felt that there were merits to collaboration. For example, 'it has a direct bearing on activating pupil interest as ideas shared are practical and enables teachers to address pupils' learning styles' (Miss Poh, female, 35 years old, 12 years of teaching experience). These results support Bellanca's assertion (1995) that there are merits when teachers work with their colleagues in informal situations: a conducive environment for the nurturing of pupils is provided.

Summary

In conclusion there was general agreement among teachers about the level of support rendered by the school personnel, resources, venues and timing although differing perceptions in certain areas could reflect differences in the needs of various groups who are at different stages of their professional careers. The findings are consistent with a large body of research that found that teachers think there should be various types of CPD activities in different venues (Swenson, 1981; Korinek, Schmid & McAdams, 1985; Wu, 1987). Certainly, the relative appropriateness of different modes for satisfying different CPD needs requires detailed consideration by individual teachers as well as those responsible for the provision of CPD activities.

Overall, in drawing comparisons in the relationship between CPD variables and other variables, it may be concluded that Singapore teachers did not attend CPD

activities actively and that even when they attended these activities, they were motivated by external factors. It is interesting to note that Singapore teachers appeared to be highly motivated by their external environment (extrinsic factors) such as the Role of Principals, Leaders and Colleagues and School Resources. The Role of Principals was the most significant factor although a culture of collegiality and collaboration was also found to be a key factor in teachers' participation in CPD.

The results correspond with findings by McLaughin and Berman (1977) that for teachers to want to participate in training, they will need support mechanisms such as released time for schools to indicate to them that professional development is a serious business. Similar findings were reported by Showers, Joyce and Bennett (1987) for suggested forms of support such as the formation of peer teacher buddy systems and mentors, as well as small group support and assistance. The results also confirmed findings by researchers (Wood, McQuarrie & Thompson, 1982; Wu, 1987) on the provision of suitable timing, venue and teaching materials.

c) Relationship Between CPD Activities and Subject Variables

In the proposed model, some subject variables were also included, such as gender, age and the years of teaching experience of teachers. These variables might be related to the teachers' CPD activities. However, the relationships between any of these subject variables and any of the activities cannot be calculated by Pearson's correlations. Therefore, Multivariate tests (MANOVA) and follow-up univariate tests were performed.

Using MANOVA, the four kinds of activities were treated as dependent variables and at the same time gender, age groups and years of teaching experience were each treated as independent variables. Thus, instead of performing a Three-Way MANOVA, it was considered more appropriate to perform a two separate Two-Way MANOVA and follow-up univariate tests. One more reason for using these tests to analyse data is that age groups and years of teaching experience are highly positive correlated variables. They therefore share a great proportion of variance, for example, it makes sense to infer that older teachers are more likely to have more years of teaching experience.

Relationship Between CPD Activities and Subject Variables

MANOVA and follow-up univariate tests did not reveal any significant differences for teachers in different age groups or with different years of teaching experience for CPD activities. No significant interaction between gender and age groups or years of teaching experience was also found. It is interesting to point out that, as reported earlier in Section One this chapter (Please see p82), significant differences were found for the teachers in different age groups or with different years of teaching experience in their perceptions of their own needs. The younger teacher or the teachers with less years of teaching experience reported that they needed to acquire more skills through their CPD activities, although they did not attend different activities more frequently. Thus, one may infer from the results that intrinsic factors were not related to teachers' CPD activities, since younger teachers or the teachers with less years of teaching experience did not really attend any CPD activities more frequently even though they held a stronger perceived need for help in developing their different skills.

The MANOVA results showed that the only significant difference was between male and female teachers (*Wilks' Lambda* = .923, with $F = 6.25$ and $p < .001$). Results from the multivariate tests, seemed to confirm that female teachers attended the CPD activities more often than males. This makes sense as female teachers had indicated higher needs (Please see p86).

The follow up univariate tests revealed significant differences between male and female teachers on two kinds of activities: Formal Activities ($F(1, 301) = 12.24$, $p < .01$) and Self-Directed Activities ($F(1,301) = 18.87$, $p < .01$). For Formal Activities (Table 8), male (M=2.70; SD=0.59) and female (M=2.99; SD=0.58) teachers appeared to be quite different in their involvement. Likewise for Self-Directed Activities, female teachers (M=2.96; SD=0.57) were more active than male teachers (M=2.59; SD=0.64).

Relationship Between CPD Activities and Gender

It is interesting to find that male and female teachers showed significant differences in attending Formal Activities in schools. One reason could be that in Singapore, teachers are required to be involved in Formal Activities that are essentially directly related to the requirements of 100 hours training and, at most times, are related more to school needs than individual teacher needs. It could also be that male teachers possess additional qualifications that exempt them from some core 'compulsory' modules and therefore they do not need to attend some Formal Activities.

Significant gender differences were also found for Self-Directed Activities that are autonomous and reflective activities. The gender difference could be because female teachers preferred or were more disciplined - to read, write and review textbooks and journals, and attend Open University and Masters courses - than their male counterparts.

From the low means reported (Table 8), it is evident that both male and female teachers did not attend Nonformal Activities actively to grow as reflective, experiential and collaborative learners. It is possible that both male and female teachers did not have the necessary skills or knowledge to conduct academic research or even to read research journal articles.

It is interesting to note that male and female teachers did not show any significant difference in attending Informal Activities (Table 8). The means for male teachers (M=2.62; SD=0.66) and female teachers (M=2.77; SD=0.59) were not very high. This means that both male and female teachers attended Informal Activities similarly; they attended CPD activities, but not that actively.

A check on all the original items in this scale showed that although the items in the Informal Activities Scale were not related to some kinds of academic work, yet in some ways they were similar to the items in the Nonformal Activities Scale: they were both informal and autonomous, that is, teachers have the right to decide whether or not they wish to attend or conduct these activities. For example, some items asked if teachers viewed videotapes, observed other lessons or attended focus group discussions or peer discussions. Whilst these activities are not academic research

work, they are autonomous activities and teachers have the right to decide not to participate in such activities. However, as mentioned earlier, female teachers did not show significantly higher means than male teachers in these autonomous or higher level academic activities (Informal Activities and Nonformal Activities).

Interview Findings

From the original items in this scale, Formal and Self-Directed Activities were found to be related to teachers' professional work. Although teachers needed to spend time on these activities, findings from this study suggested that they did 'not have much time to attend these activities, although there are some teachers who carry out these activities quite enthusiastically' (Mr Leong, male, 38 years old, 14 years of teaching experience).

The reason for the low means for Nonformal Activities was disclosed by teachers as 'we do not think that these activities are essential in a primary school and therefore will not engage in them' (Mr Yap, male, 28 years old, 2 1/2 years of teaching experience).

It is also possible these teachers did 'not have time to read research journals and to conduct any academic research work. Younger female teachers are more likely to engage in such activities, rather than leaving home for a couple more hours to attend training, so that they can keep an eye on their young children' (Mrs Lim, female, 52 years old, 30 years of teaching experience).

Interviewees confirmed that they would consider young children as 'children who have yet to complete the PSLE'. Besides, 'teachers are not likely to want to pursue such activities as they simply are too time consuming, and unless there is no choice and instructions come from the Principal, otherwise, we will not carry out research work' (Mrs Ho, female, 43 years old, 18 years of teaching experience).

As for older teachers, one main reason for their lack of motivation and skills for research, was aptly captured by this older teacher, 'Research? Oh no, I don't have the skills or the energy' (Mrs Lim, female, 52 years old, 30 years of teaching experience).

Yet another reason was that teachers perceived a lack of relevance to their career development. A male teacher frankly admitted that 'there's no need to carry out academic research work, because I will not get promoted. Promotion is based on performance that is linked to potential - there is no emphasis on research work in the ranking process, so unless teachers want to pursue postgraduate degree courses, they will not think this skill is necessary. If I were to aspire for promotion, I will try to improve my performance, instead' (Mr Yap, male, 28 years old, 2 1/2 years of teaching experience).

Although no significant difference was found between male and female teachers in Nonformal Activities and Informal Activities (Table 8), female teachers still showed slightly higher means than males in all four types of activities. The results showed that female teachers were slightly more enthusiastic about attending different CPD activities although the differences between the needs for male and

female teachers are the lowest, compared to age and years of teaching experience (Table 9) because of other reasons such as they were 'keener to improve' and could perhaps be 'a little bit more ambitious and driven than male teachers' (Ms Wong, female, 25 years old, 2 years of teaching experience).

Interviewees confirmed that there were 'more female teachers in the teaching force. Probably, it's the herd instinct, the nature of women. One goes, all go, so more female teachers are seen at courses - that gives you the impression that a lot of female teachers are attending training' (Mrs Ho, female, 43 years old, 18 years of teaching experience).

Generally, interviewees confirmed that Singapore teachers were generally agreed on these reasons for the low participation in CPD activities, 'whilst most Singapore teachers are required to attend in-service courses, school based workshops, and school staff meetings, there are far too many in-service courses provided by MOE. Teachers will attend only some of these courses as long as they can meet the requirements of 100 hours training every year. Also, some teachers, maybe males, have attended equivalent courses or have qualifications that exempt them from these Formal Activities, or if they have fulfilled their 100 hours of training, it is unlikely that they will even want to attend extra courses' (Ms Wong, female, 25 years old, 2 years of teaching experience).

Summary of Results Related to Testing Hypotheses in the Model

In testing the hypotheses in the original model proposed in Chapter Two, different statistical analyses - correlation, multiple regression, and MANOVA were used. The results showed that in Singapore, the level of primary school teachers attending CPD activities was not related to intrinsic factors or to their own perceptions about their own needs for development. Among the personal factors, gender was a significant factor: female teachers attended different CPD activities, especially activities that were related to their teaching, more keenly than male teachers.

The level of primary school teachers attending CPD activities was related to the extrinsic or school factors: these might be the Leaders, Colleagues, or School Resources, or the Role of Principals in promoting CPD activities. Different activities were found to be related to different school factors.

The study confirms that school factors influence teachers' CPD and that effective CPD is essential to improving teacher skills for effective teacher and school change. The study also extends literature in that it provides data on gender, in the context of the Singapore educational scene.

Thus the ideal model proposed in Chapter Two may be readjusted to an actual model of Singapore primary teachers in their participation in CPD activities. The model is shown in Figure 2. The dotted lines show the factors that were assumed to be related. However, results in the present study show that they were not really

related to teachers' CPD activities. The arrowed bold lines show significant correlations between the factors.

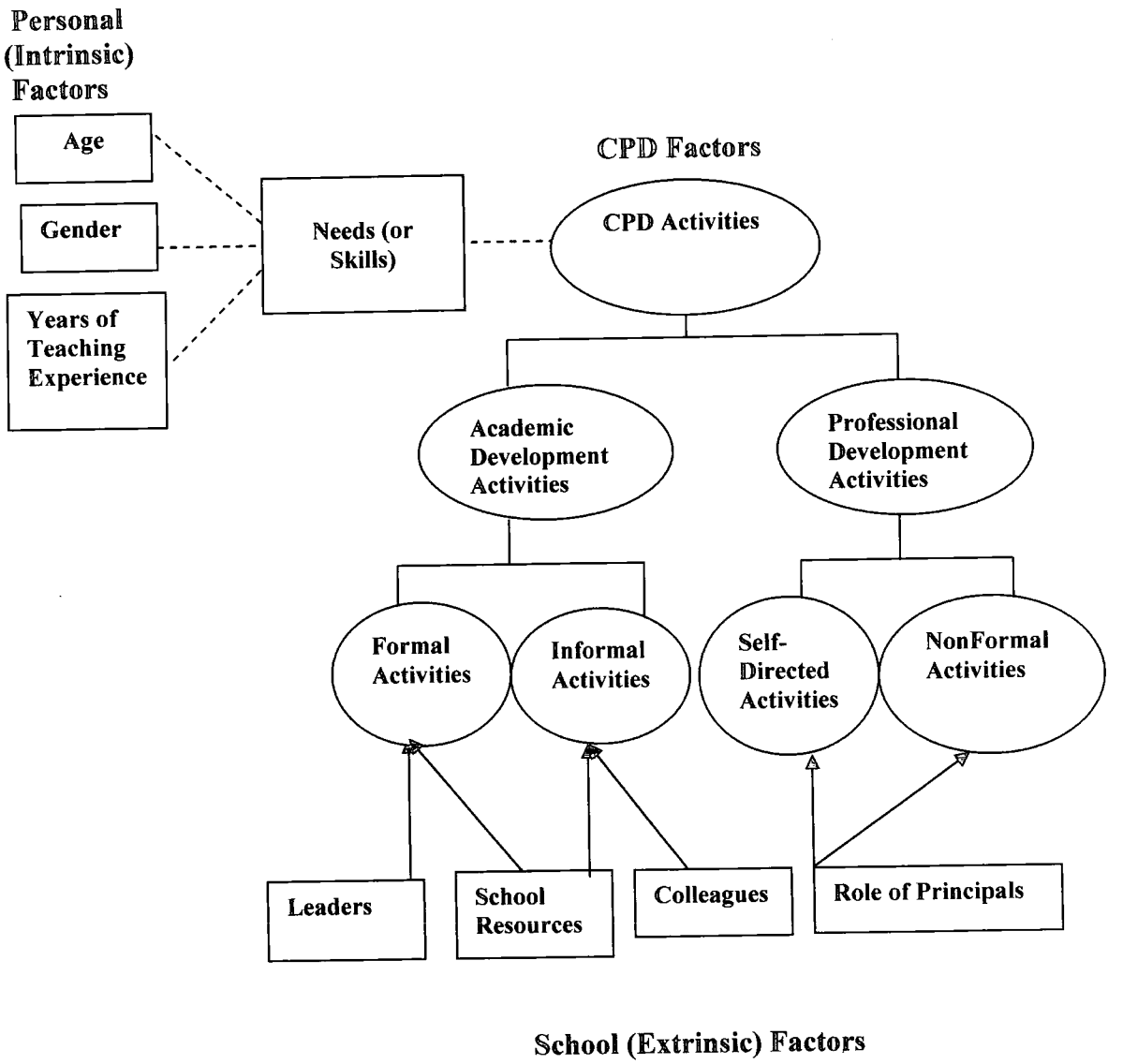

Figure 2: A Model Showing Factors Influencing Singapore Teachers' Participation in CPD Activities

Section Three: Results of Open-ended Items in Survey Questionnaire

a) Perceptions of Personal Qualities

Table 15 lists, in ranked order, the most frequently cited 'good teacher' personal qualities provided by all respondents to an open-ended item. The top two most frequently cited qualities: 'caring' (65.6%) and 'patient' (56.4%), were relational qualities, indicating teachers' recognition of the importance of these personal qualities in relating to children at primary school level.

Clearly, too, respondents recognised that qualities such as 'committed' (34.8%), 'disciplined' (29.2%), 'enthusiastic' (27.9%), 'adaptable' (26.2%), 'creative' (22.6%) and having 'integrity' (21.6%) were important. The findings reflected the emphasis on traditional values, especially being 'responsible' (17.7%) and 'knowledgeable' (17.0%), having 'humility' (1.6%) and being 'forgiving' (1.6%). The other items: 'good communication skills' (15.4%), 'lifelong learner' (15.1%), 'fair' (11.8%), 'firm' (9.8%), 'knowledgeable about related subjects' (9.5%), 'cherish own individuality' (8.2%) and 'sense of humour' (7.2%) were also cited as essential characteristics needed in light of the teachers' new role as facilitators of knowledge. However they were relatively lower in the ranking order as compared to the other personal qualities, suggesting the need to encourage teachers to keep abreast of developments and to pursue lifelong learning in the emerging new economy.

It is noteworthy that being 'available' (0.7%) and 'punctuality' (3.0%), which are important in Western cultures, are not as highly valued by teachers in Singapore

where collectivity and group norms are still predominant Asian values that are cherished over the individual's needs and rights.

Table 15: Perceptions of Personal Qualities (n=310)

Personal Qualities	Total (%)	TotalRank
Caring	65.6	1
Patient	56.4	2
Committed	34.8	3
Disciplined	29.2	4
Enthusiastic	27.9	5
Adaptable	26.2	6
Creative	22.6	7
Integrity	21.6	8
Recognise individual differences	18.7	9
Responsible	17.7	10
Knowledgeable	17.0	11
Good communication skills	15.4	12
Lifelong learner	15.1	13
Fair	11.8	14
Firm	9.8	15
Knowledgeable about related subjects	9.5	16
Cherish own individuality	8.2	17
Sense of humour	7.2	18
Punctual	3.0	19
Humility	1.6	20
Forgiving	1.6	21
Be available	0.7	22

Interview Findings

According to most interviewees, these three qualities, 'caring', 'patient' and having 'integrity' were key requisites of the profession. These sentiments echo the Asian culture that propounds a 'bonding relationship as a family' between 'masters' and 'proteges' and reflects teachers' response to the Government's strategic intentions to move toward greater people orientation in an ability-driven education.

Other typical responses on qualities that teachers must posses, include being able to recognise individual differences especially in achieving the desired outcomes of education. 'Teachers must be willing to accept changes and to adapt to new changes such as the shift from an efficiency-driven to an ability-driven education

system in fast-paced Singapore. Unwillingness to accept changes means that ultimately our children will not benefit from the changes in the system' (Ms Wong, female, 25 years old, 2 years of teaching experience).

Interviewees recognised that qualities such as 'committed', 'disciplined', 'enthusiastic', 'adaptable' and 'creative' are important in setting good examples and imparting values to children, as these are important for good role modelling of values. Echoing the sentiments of the rest, one interviewee commented, 'It is important for teachers to set good examples and to impart values to children. Teachers must be intelligent, enthusiastic, creative, very focused, very disciplined and very positive towards changes in the system, otherwise they will be steeped in old ways of teaching and no matter how many training sessions they go for, no matter how many new courses they attend, they will not want to implement these changes in a classroom' (Mdm Tham, female, 52 years old, 41 years of teaching experience).

Summary

On the whole, the findings of this study correspond with studies by Stern (1963), Hare (1993), Jackson et al (1993), Rudduck et al (1997) and Day (1999) that effective teachers are characterised by these traits: caring, patient, kind, possess knowledge of subject matter, willing to be flexible, able to perceive from students' point of view, able to personalise teaching, willing to experiment, possess good questioning skills, and able to provide study aids and well-established examination procedures. But while the findings are consistent with research studies, they nonetheless reflect typical Singaporean values that are closely aligned to government policies and the MOE vision. These are indicative of the success of the Ministry's

objective to drive home the notion that teachers have a responsibility to mould the future of the young and the nation's expectations for quality teachers (Rear-Admiral Teo, 2000).

b) Perceptions of Components of an Integrated CPD Programme

Respondents were asked to rank the order of importance of activities which teachers had suggested during the pre-survey interviews. Table 16 summarises the results of teachers' perceptions of an integrated CPD programme.

Table 16: Perceptions of Components of An Integrated CPD Programme (n=310)

Components	Mean	SD	Total Rank
Peer Support Groups	4.3	3.2	1
Peer Coaching	4.8	3.6	2
Mentoring	5.2	3.6	3
On-going In-service	6.1	3.8	4
Demonstration Lesson	6.9	3.6	5
Team Teaching	7.0	3.4	6
Coaching for Reflective Thinking	8.0	3.2	7
Teachers' Handbook of Skills	8.3	4.4	8
Conferencing	8.4	3.4	9
Detailed Orientation	8.4	3.9	10
Focused Study Groups	8.5	3.1	11
Quality Learning Circles	8.6	3.8	12
Classroom Observation	9.5	4.0	13
Role Plays/Simulations	10.7	3.4	14

Peer support groups was rated by teachers as the most important activity in helping them to meet the challenges of working out the TSLN vision. Teachers ranked peer coaching as the second most important CPD activity. This finding confirms earlier results (p88) that teachers welcomed support from colleagues in using IT and applying new strategies for teaching creative and critical thinking skills.

The present study confirms the importance of structured support provided by

a formal mentoring programme (Avery & Gray, 1995). Although teachers viewed mentoring as important, there was still an expressed need for a more detailed orientation and for a handbook to be provided as soon as possible to the new and beginning teachers (Feldlauffer, Hoffman & Schaeffer, 1990; Cooke & Pang, 1991).

Teachers felt that one way they can learn from other colleagues' experiences and thereby gain confidence in delivering new lessons was through demonstration lessons. Team teaching was ranked next, as teams provide secure environments in which mistakes can be made and opportunities for 'apprentices' to complete projects in a 'no risk' environment (West-Burnham & O'Sullivan, 1998). Lower ratings were given to conferencing after observations owing to 'time constraints'; followed by focused study groups that emphasised finding solutions to school problems. Quality Learning Circles, classroom observations and role plays that were found to be tedious and awkward, were ranked lowest.

Interview Findings

Most of the interviewees confirmed that it was most important for the school to provide opportunities for teachers to work in a peer supportive environment. Hence, peer support groups and peer coaching were 'most welcomed'. Suggestions were made by interviewees for 'peer groups to meet formally and informally once or twice in the first term in pairs or clusters for relatively new teachers to meet to share positive experiences', similar to the types of cooperative professional development activities proposed by Watts (1985) and Joyce and Showers (1995).

Teachers requested for schools to 'provide a formal CPD programme for new and beginning teachers who quite often had to grope about in their first few months trying to familiarise themselves with the school system'. In this regard, teachers viewed mentors as 'a valuable component of an effective CPD programme'. They suggested that mentors should 'be supportive and nurturing personnel with more experience'. They could be 'the School Mentoring Co-ordinators, HODs or other experienced teachers whose role is to counsel, advise and coach skills improvement', confirming findings by Hjornevik (1988).

Many teachers indicated that pre-service training alone was not enough and that start-up inductive activities on survival skills should be provided at the beginning of new teachers' assignments, agreeing with findings by Olson and Besch (1983) and Huling-Austin (1990). Interviewees also suggested that 'regular and short school-based workshops be offered whenever there is an expressed need from staff'.

Teachers agreed that schools could arrange for demonstration lessons to 'identify the strengths of lessons and at the same time learn useful teaching techniques', similar to findings by Joyce and Showers (1995).

Interviewees indicated a strong preference for 'small group discussions with mentors' that centred on 'self-analysis questions and answers and self-critique of classroom lessons' and 'guidance and encouragement through a growth plan for teachers as essential processes of reflective self-examination'. These findings support research findings by Heath-Camp and Camp (1992), Christensen, McDonnell and Price (1988) that there is a need for a growth plan for teachers so that they can think

about their future and determine short-term and long-term goals. The plan should be individualistic and developed as a collaborative effort between teachers and mentors.

Interviewees found team teaching fairly helpful as they could 'express their reactions, concerns and questions regarding newly presented techniques in a team'. The findings add to extensive research that opportunities for teachers to work alongside others in teams in their classes to resolve problems or implement changes, to carry out action-research, to gain access to outside resources and to observe other teachers in other schools, are critical strategies (Leithwood & Montgomery, 1982; 1986). Teachers also fancied 'sharing and relating new ideas to their existing framework of teaching experience', supporting findings that conferencing assures time for reflection and focuses on events recorded rather than on impressions (Acheson & Gall, 1980).

Conferencing and a follow-up support system involving 'other experienced teachers to help teachers gain a better understanding of all aspects of teaching and feel encouraged about themselves and their students' were suggested. While teachers agreed that conferencing could be helpful 'in clarifying important points and in contributing ideas for problem solutions', they felt that such meetings were regarded as 'time-consuming, especially when there is no one to facilitate so the discussion goes on and on by one person', supporting findings that a skilful facilitator is necessary to ensure that one or two people do not dominate the discussion for high productivity (Francis, Hirsh & Rowland, 1994; Murphy, 1995).

An interviewee gave an explicit reason for the low rating on Quality Learning Circles that follow a structured pattern of activities to solve a problem (Wlodarczyk & Bandy, 1984), 'I wouldn't wish this even upon my worst enemy'. Classroom observations were unpopular, as these also give 'sleepness nights'. Role playing was ranked last as Singapore teachers, being Asians are 'not used to assuming roles in front of an audience and therefore feel uncomfortable, anxious and awkward' (Mdm Tham, female, 50 years old, 32 years of teaching experience).

Summary

On the whole, the findings showed that teachers preferred activities that were peer-related, relaxing and non-threatening. The findings match earlier assertions by teachers that they found Colleagues and Leaders helpful and would therefore enjoy collegial, peer-related and self-chosen activities more if such a structure were to be set up. The findings are consistent with research studies that such opportunities for involvement within the context of a learning organisation is the way ahead for Singapore teachers to grow as professionals (Firth, 1977; Trohanis & Jackson, 1980; Mizruchi, 1983; Senge, 1990).

Conclusion

The descriptive results in Section One showed the basic activity level of Singapore teachers and their perceptions about the external and internal factors that shaped their approach to professional development. The results in Section Two on the hypotheses testing in the model revealed that teachers' CPD activities were not related to intrinsic factors but to extrinsic factors. Multiple Regression results showed

that Formal Activities were related to Leaders and School Resources; Informal Activities were related to Colleagues and School Resources; Self-Directed Activities and Nonformal Activities were related to the Role of Principals. Results also showed teachers' recognition of a range of 'good teacher' personal qualities that would help them to cope more effectively with educational changes, as well as teachers' preference for collegial, peer-related and self-chosen activities, given an integrated CPD programme for Singapore teachers.

CHAPTER FIVE

CONCLUSION

Introduction

This chapter attempts to integrate all the relevant research data and discuss theoretical as well as practical implications of these data in five sections. The first section presents the summary of key findings, the second section provides the implications, the third section sets out the recommendations, the fourth section presents the significance of the study and the fifth section provides suggestions for further research. The discussion will focus on significant or interesting findings, which emerged from the current study.

Section One: Summary of Key Findings

Personal Factors

The present study seems to show that Singapore teachers currently do not have strong needs to learn new skills to cope with Singapore's educational changes (Table 6). During the interviews, they expressed that they were generally confident about their current competency levels (Mr Tham, male, 51 years old, 30 years of teaching experience, p90). The youngest and less experienced teachers who are in the 'Career Entry Stage' and 'Entering the Adult World Phase' expressed a need for skills such as interaction, managing and instructional techniques and the use of IT for

lessons. As teachers became older (Reaching the Professional Plateau and Preparing for Retirement Phases and the Preparing for Retirement Stage), their perceived needs for further professional development seemed to decrease with age and years of teaching experience, congruent with research findings (Super, 1957; Schlechty & Whitford, 1983; Sikes, 1985, cited in Ball & Goodson, 1985; Huberman, 1985, cited in Kremer-Hayon, Vonk & Fesslar, 1993; Burden, 1986; Huberman, 1988; Little, 1989; Leithwood, 1992).

Young female teachers appeared to be more active than male teachers in seeking to learn a range of new skills (Table 8). As a whole, male teachers appeared to have slightly low assessment of their needs in this field. One main reason, (Mr Lam, male, 28 years old, 2 years of teaching experience, p90), was that they were likely to see themselves as being more hardy, having survived hard army days and had therefore learnt survival skills, unlike their female counterparts.

During the interviews, teachers indicated their need to learn other skills and their desire to be change agents and lifelong learners so as to remain relevant (Ms Hee, female, 29 years old, 8 years of teaching experience, p88) and to sustain the change with its oncoming initiatives and developments (Ms Choo, female, 30 years old, 10 years of teaching experience, p89), confirming findings that teachers need to be equipped with new skills to cope successfully with change (Sparks & Loucks-Horsley, 1989; Fullan, 1991; Hargreaves, 1994; Craft, 2000).

Therefore, they wished to learn about the process of change, in particular, what they should do and how change could be achieved successfully (Miss Lee, 26

years old, 1 year of teaching experience, p88). They also wished to increase their perceptual skills such as strategic planning, innovation and entrepreneurship, and to keep up-to-date with pedagogy, so as to be able to translate the TSLN vision into reality (Ms Boo, female, 35 years old, 10 years of teaching experience, p93) - a finding that suggests their uncertainty of long-term sustainability of their skills, and their desire to be lifelong learners.

This finding is important because for teachers to be effective change agents, they should not only have the desire to improve, but also the knowledge and expertise to fulfil their roles as change agents. They need to be involved in the implementation and management of change. It is when teachers improve that schools improve (Wideen & Andrews, 1987; Sparks & Loucks-Horsley, 1989; Fullan, 1993; Hargreaves, 1994; Craft, 2000). So, if teachers do not perceive strong needs to improve classroom teaching skills, they may not be so readily able to take that first step to play their roles as change agents.

On the whole, results show that no matter how teachers felt about their needs, they were generally not attending CPD activities actively, to meet their expressed needs (Ms Boo, female, 35 years old, 10 years of teaching experience, p93). The low recognition of skills on the part of teachers, especially older and more experienced teachers has serious implications for the long-term success of the new initiatives.

School Factors

Results from the questionnaire data point to teachers being influenced more by extrinsic factors than intrinsic reasons in their involvement in CPD (Table 7). The research shows that the Singapore system, while having many points in its favour, needs fine-tuning and development in ways that meet teacher-defined needs more effectively.

At school level, teachers were satisfied with the help and support from Colleagues, Leaders and School Resources. All teachers indicated that they found Principals to be least helpful. Older teachers (41-50 years old) who had more experience (>40 years of teaching experience) and who are in the phases: Transition From Youth to Maturity and Preparing for Retirement, and stages: Life Review and Stock Taking, Reaching a Professional Plateau and Retiring, seemed to have a slightly better appreciation of the Role of Principals, Colleagues and Leaders. These teachers who have not been promoted to senior positions, confirmed during interviews their acceptance of their age and position and were still positive towards the support given by the leadership and their colleagues in the school (Mr Ong, male, 56 years old, 35 years of teaching experience, p102). This finding supports studies that some teachers at this stage can simply enjoy teaching and show a renewed commitment to school improvement (Super, 1957; Schlechty & Whitford, 1983; Sikes, 1985, cited in Ball & Goodson, 1985; Huberman, 1985, cited in Kremer-Hayon, Vonk & Fesslar, 1993; Burden, 1986; Huberman, 1988; Little, 1989; Leithwood, 1992). This finding also implies that this group of teachers can be appointed to mentor younger Singapore teachers (Ryan, 1987; Cooke & Pang, 1991;

Cole, 1997). Noteworthy is that all the other age groups considered Colleagues as helpful in sharing invaluable ideas, experiences, techniques and materials involved.

Multiple Regression results point to low self-dependence even for self-reliant and self-chosen activities (Tables 11-14). There was also general agreement during interviews that if Principals could be more empathetic and would play a key role in promoting CPD and its benefits (Mr Ho, male, 30 years old, 9 years of teaching experience, p99), by charting a career development plan for individual teachers (Mr Chee, male, 45 years old, 19 years of teaching experience, p99) and by developing the school as a learning organization, teachers would then be more inclined to participate in CPD activities (Ms Boo, female, 35 years old, 10 years of teaching experience, p100). This finding supports research that strong educational leadership is necessary for effective CPD (Leithwood & Montgomery, 1982; Fullan, 1982; Crandall, 1982; Goodlad, 1984; Goldring & Rollis, 1993).

Male teachers appeared to appreciate school factors, that is, opportunities for informal conversation and sharing of ideas with Principals, Colleagues and Leaders, more than female teachers. During the interviews, one main reason that surfaced was that male teachers were less inhibited and could mix around more freely with these two groups of school personnel. Another was that the Asian mentality is more accepting of male teachers to be developed as leaders, by their Leaders and Colleagues, so male teachers were more comfortable in interacting with them (Mr Tay, male, 28 years old, 4 years of teaching experience, p103).

All groups of teachers regarded School Resources such as commercial and teacher-made resources as helpful, as these had contributed to enhancing teachers' teaching, activating student interest, and saving time, cost and effort for teachers (see Interviews, p103-107). There was an expressed need from all teachers for more materials to help them to teach IT lessons more effectively (Mr Yap, 28 years old, 2 1/2 years of teaching experience, p88; Mr Tham, male, 51 years old, 30 years of teaching experience, p90; Ms Wong, female, 25 years old, 2 years of teaching experience, p104).

It appeared too, that for teachers to be motivated to participate in training, they would also need strong support mechanisms such as released time, clear goals and tangible benefits such as certificates, monetary rewards and promotions (Mr Ho, male, 52 years old, 31 years of teaching experience, p107). To further motivate the teaching force, a collegial environment and especially for new and beginning teachers, a formal induction programme based on assessment of needs, inductive support and a handbook of skills were suggested (Mdm Tham, female, 52 years old, 31 years of teaching experience, p124), supporting a similar proposal by Leithwood and Montgomery (1986).

For CPD to succeed, the present study shows that Principals must assume a more active and supportive role. They need to be good role models, to create a peer-supportive environment, to study ways in which teachers can be better motivated and supported through their Colleagues and Leaders, and to participate more actively in CPD activities (see Interviews, p98-107). These conclusions are supported by findings by Burden (1986) and Leithwood (1992) that as teachers progress through

developmental stages, they experience different interests and needs that impact their perceptions of work. Then again, many other studies also show that CPD efforts are most successful where a norm of collegiality exists (Brookfield, 1986; Caldwell, 1986; Wood, Caldwell & Thompson, 1987; Little, 1989; Roy & O'Brien, 1991).

The present study yields significant data on differences by age groups, years of teaching experience and gender, in teachers' perceptions of school factors, suggesting that teachers have different growth needs at different stages of their professional careers.

CPD Factors

Teachers' perceptions about CPD activities offered by the school were consistent: they did not attend all CPD activities equally (Table 8). They were more inclined to attend Formal Activities, followed by Informal Activities, Self-Directed Activities, then Nonformal Activities. All these activities were not related to teachers' expressed needs (Table 10).

At the MOE level, teachers perceived that the MOE policy on 100 hours of training had not been translated accurately at ground level frustrating' (Ms Goh, female, 33 years old, 10 years of teaching experience, p100). Four main challenges teachers faced were first, a mismatch between teachers' needs and course content (Ms Wong, female, 25 years old, 2 years of teaching experience, p120); second, courses being designed to meet school rather than individual needs (Mr Yap, male, 28 years old, 2 ½ years of teaching experience, p121); third, teachers feeling coerced to meet

the 100 hours of training with no follow-up and support (Mrs Ho, female, 43 years old, 18 years of teaching experience, p121) and last, teachers having no choice in the selection of topics (Mr Fong, male, 54 years old, 32 years of teaching experience, p122).

During the interviews, an expressed frustration was that teachers were hard pressed for time (Ms Sun, female, 38 years old, 13 years of teaching experience, p113). Even if teachers found courses useful, they felt compelled to attend training. Moreover, these courses were either poorly co-ordinated, dull, lacked variety and form, too costly or the speakers were uninteresting (Mr Liew, male, 30 years old, 3 years of teaching experience, p120). Teachers articulated that MOE should call for teachers' feedback and understanding of the training policy before implementation, to avoid wastage of time and money, so that teachers could support the policy and take ownership for their own learning (Mr Yap, male, 28 years old, 2 ½ years of teaching experience, p121), a point raised by Ainscow et al (2000) for effective CPD.

These findings imply that firstly, Principals should work hand in hand with MOE to manage correctly teachers' perceptions about policy as suggested by Day (1999) and to relate individual training to school improvement needs. Secondly, Principals should craft learning organisations in a non-threatening environment, so that teachers can question, make mistakes and feel they are not be marked down - then the morale will be high as suggested by research (Crandall, 1982; Fullan, 1982; Leithwood & Montgomery, 1982; Goodlad, 1984; Goldring & Rollis, 1993). This may be done by providing strong visible support, by making a needs assessment study, by conducting work reviews with teachers and by setting up an annual

systemic plan for individual teacher's continuing CPD, with follow up on the transfer of training for long-term sustainability (Crandall, 1982; Fullan, 1982; Leithwood & Montgomery, 1982; Goodlad, 1984; Goldring & Rollins, 1993).

According to Rodriguez and Johnstone (1986), 'teaching can be a very lonely profession' (p99). Singapore teachers apparently recognise this isolation. They suggested that one way to resolve this dilemma and to manage change successfully, was to be involved in the process and implementation of change (Mr Yap, male, 28 years old, 2 1/2 years of teaching experience, p88; Ms Lee, female, 26 years old, 1 year of teaching experience, p88), to think of one another as partners-in-education (Mrs Ho, female, 43 years old, 18 years of teaching experience, p133), to learn by sharing their successes and failures with one another and to change their practices to improve student performance (Mr Fong, male, 54 years old, 32 years of teaching experience, p123).

Thus, one of the most appropriate methods of CPD is to provide a system for teachers to be learning partners in a peer supportive environment (Day, 1999; Ainscow et al, 2000). Among the different approaches under the broad spectrum of peer collaboration, peer support groups and coaching with follow up by a supportive advisor to help teachers to correctly apply skills learned in training, were regarded as top favourites with Singapore teachers. The above findings seem to have deep implications on the culture and structure in which teachers work and the possibility of leveraging on the experience of older teachers (41-50; <40 years of teaching experience) as supportive advisors.

Relationship between CPD Activities and Personal Factors

There was no meaningful relationship between teachers' CPD and their perceptions about their current needs in developing different skills (Table 10). Whilst teachers had expressed needs and desired training, especially to cope effectively with long-term changes in the education system, to stay relevant and to sustain the changes, in reality they were not participating actively in CPD activities available to them (Table 8). Rather, they seemed to be attending courses to meet the 100 hours of training (Mrs Ho, female, 43 years old, 18 years of teaching experience, p121). Evidently, the types of courses offered did not appear to be suitable for different teachers with different needs (Ms Wong, female, 25 years old, 2 years of teaching experience, p120). As discussed earlier, the interview results show very clearly that teachers want better planned CPD to meet their expressed needs (see Interviews, p119-124).

In drawing comparisons in the relationship between CPD activities and personal factors, it may be concluded that Singapore teachers did not attend CPD activities keenly (Table 10), and that they were not motivated by intrinsic factors (Table 6) and that they showed low self dependence even for self-chosen and self-reliant CPD activities (Table 10). On the contrary, teachers appeared to be highly motivated by their extrinsic factors (Table 7). The Role of Principals, found to be the least helpful, was the most significant factor. A culture of collegiality was also found to be another key factor in teachers' participation in CPD (Table 7). These results clearly confirm that teachers want better support mechanisms such as released time for schools to indicate to them that professional development is a serious business,

confirming findings by Guskey (1999) about the importance of providing released time for CPD.

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Relationship Between CPD Activities and School Factors

A significant finding is that Singapore teachers appear to be highly motivated by extrinsic factors (Table 8). Results reveal a strong correlation between Singapore teachers' CPD and extrinsic factors (Table 10).

For example, there was a positive relationship between the scale of Formal Activities and the scale of Informal Activities, meaning that if teachers were involved in Formal Activities more frequently, then they would be more involved in Informal Activities too. Results point to Formal Activities being related to Leaders and School Resources, and Informal Activities being related to Colleagues and School Resources. This means that when Leaders were more supportive in Formal Activities, teachers would participate more in Formal Activities. Similarly, when Colleagues were more supportive in Informal Activities, then teachers would most likely want to participate in Informal Activities.

Teachers generally agreed that they were not exactly comfortable with Formal Activities or compulsory courses, although these did expose them to the new MOE initiatives but they could have been more creative (Mr Fong, male, 54 years old, 32 years of teaching experience, p136). There was a definite preference by teachers for Leaders to organise well-spread out school-based CPD activities at the beginning of teachers' long holidays, but not after school hours, so that the rest of teachers'

holidays would be left relatively untouched for them to recuperate (Mr Poon, male, 39 years old, 18 years of teaching experience, p105).

Informal Activities were significantly related to the 'Colleagues' factor. This is understandable, as these activities require other colleagues' support and communication, such as observing lessons, sharing experiences and expertise, and attending study groups which are all closely related to other colleagues. All these activities, if carried out with released time would certainly result in increased professional competence, an expansion of teachers' repertoire of teaching behaviours and the development of their behaviours as adult learners as cited by (Caldwell, 1986, cited in Duttweiler, 1988, p4).

Results point to a significant relationship between higher order academic skills and job-related activities (Nonformal and Self-Directed Activities) and the Role of Principals (Tables 11, 12). This means that when Principals played an active role in promoting these two activities, teachers were more inclined to be involved in them. The other extrinsic factors such as Leaders, Colleagues and School Resources apparently, did not play such a prominent role in teachers' involvement in Nonformal and Self-Directed Activities.

Teachers were generally agreed on their perceptions of the suitability of venues and timing for CPD activities, although again differing perceptions in certain areas could reflect differences in the needs of various groups who are at different stages of their professional careers (see Interviews p105-107). Results reveal that fundamental factors such as better school resources, appropriate venues and timing,

better speakers and better co-ordinated courses, do influence teachers' willingness to attend training to address the challenges of school reforms in Singapore (see Interviews p98-107), congruent with findings by Mortimore (1991).

Activities, within the school and near the school, were considered first choice for practical reasons such as saving on time and transport costs and reducing stress caused by travelling (Ms Ang, female, 27 years old, 3 years of teaching experience, p106) congruent with findings by researchers (Collins, 1981; Swenson, 1981; Korinek, Schmid & McAdams, 1985; Wu, 1987). Hotels and country clubs were a welcomed change (Ms Lee, female, 50 years old, 25 years of teaching, p105). Many teachers expressed appreciation for informal opportunities as sources for exchange of ideas, mind stimulators and morale boosters that provided multiple benefits (see Interviews p105-107). Teachers strongly suggested that they be 'paid' to be trained. MOE materials and the scheme for teachers to own personal computers at a subsidised rate to all teachers were welcomed by teachers.

Relationship Between CPD Activities and Subject Variables

Results show significant differences for teachers in different age groups and with different years of teaching experience for teachers' needs (Table 6). For example, older teachers (Preparing For Retirement Phase and Reaching a Professional Plateau and Retiring Stages) reported a lesser need to acquire skills and younger and less experienced teachers (Entering the Adult World Phase and Career Entry Stage) reported that they needed to acquire more skills through their CPD activities.

Generally, female teachers attended all four types of CPD (Formal, Self-Directed, Nonformal, Informal) more often than males (Table 9). Interestingly, results show that female teachers attended more Formal Activities and Self Directed Activities more often than male teachers. Several reasons were given at interviews. One was that female teachers had expressed higher needs so they are keener to attend training (Miss Lee, female, 26 years old, 1 year of teaching experience, p85). A second reason was that they were more disciplined to read professional journals, write and review textbooks and journals, to observe other teachers teaching and give professional feedback to build up their portfolios as Senior Teachers, or to gain accreditation for faster promotions through attending Open University or Masters courses (Ms Su, female, 30 years old, 7 years of teaching experience, p112). A third reason was that female teachers were more relaxed in some social settings and they would attend training to discuss problems and to be with their friends (Miss Lee, female, 50 years old, 25 years of teaching experience, p105).

Results (Table 10) show a low relationship between Formal Activities and teachers' perceptions about their needs as teachers were not able to implement the new skills or strategies they learnt from these training programs, owing to time constraints and lack of support. The result was that teachers chalked up their hours to meet the 100 hours target. At the same time, their interest decreased, alongside with commitment, in attending Formal Activities keenly (Mrs Ho, female, 43 years old, 18 years of teaching experience, p121).

Both male and female teachers did not attend Informal Activities and Nonformal Activities keenly, although these activities are self-chosen improvement

activities that require teachers to undertake action research, to participate in learning circles, to experiment with new approaches and innovations to improve teaching or to present at conferences. Teachers explained that they were already thinking through the day and night as '24-hour teachers and were just too tired to think anymore' (Mr Chan, male, 57 years old, 41 years of teaching experience, p121). In some ways, this finding reflects that Singapore teachers are growing minimally and certainly, only incidentally, as reflective, experiential and collaborative learners.

On the whole, although optional or freely chosen activities (Self-Directed Activities, Informal Activities, Nonformal Activities) appeared to meet teachers' needs, results show that these activities were not related to male and female teachers' needs and therefore did not meet teachers' expressed needs. Consequently, teachers did not pursue these activities keenly. Again time was quoted as a major challenge, congruent with fndings by McLaughlin & Berman (1977).

Perceptions of Personal Qualities Of Singapore Teachers

Results show that teachers had definite views about good teacher role models and their personal qualities suitable to attaining educational reforms and successful change. The top two qualities were perceived as: caring, patient. The other qualities: committed, disciplined, enthusiastic, adaptable, creative, integrity, recognise individual differences, knowledgeable, good communication skills, lifelong learners, fair, firm, knowledgeable about related subjects, cherishing own individuality, a sense of humour, punctuality, humility, forgiving and being available, were cited as

essential characteristics needed in the light of teachers' new roles as facilitators of knowledge. It is clear that these self images run counter to the implicit models of the effective teacher built into professional development programmes in Singapore.

Components of an Integrated CPD Programme

Singapore teachers ranked the following activities as the seven most important suggested components of an integrated CPD programme: Peer Support Groups, Peer Coaching, Mentoring, On-going In-service, Demonstration Lesson, Team Teaching and Coaching for Reflective Thinking. It appeared that they preferred collegial, peer-related and self-chosen activities rather than activities that were more academic in nature and require more effort and time to carry out, such as, a Teachers' Handbook of Skills, Conferencing, Detailed Orientation, Focused Study Groups, Quality Learning Circles, Classroom Observation and Role Plays/Simulations (Table 15). The results confirm earlier findings that teachers prefer Informal and Self-Directed Activities (Table 8).

Section Two: Implications

Implications for CPD Programmes

- Content Relevance

The findings have important implications for the focus of CPD programmes. In the light of teachers' expectations, it is evident that the outcomes of effective CPD programmes should be enhanced professional competence, effective teacher behaviours and 'good personal teacher qualities' to help teachers to cope effectively with continuous educational changes. A number of teacher needs have been identified

in this study that should receive a greater profile in both pre-service and in-service courses that is aimed to equip teachers, through self-directed, experiential, reflective and collaborative activities, to be more competent to work out the TSLN vision effectively.

For these teachers, CPD progammes must seek to equip them with up-to-date pedagogy and relevant content, to help them develop a personal mastery of a repertoire of skills, so as to stay relevant and to sustain the changes with its oncoming initiatives. Programmes must also attempt to address the concerns of teachers in specific areas, such as interaction, managing, instructional techniques identified in this study (For Analysis of Singapore Teachers' Perceptions Of Specific Needs, see Appendix F) and the change process through collegial activities such as Informal Activities and Self-Directed Activities.

One key area of concern for teachers and schools was the need to equip them in the use of IT in view of the huge investment of more than half a million dollars that the MOE had made for schools to purchase hardware and software. This implies the possibility of introducing e-learning for pre-service and in-service teachers. Another major concern was to develop the behaviours of teachers as lifelong adult learners. This too implies the need to look into ways to change teachers' mindsets, and to motivate them in self-renewal through CPD.

- Alignment with Life and Career Cycles Development

There is a need for greater attention in CPD programmes to several aspects which younger and less experienced teachers found problematic in their early years of

teaching. A key finding which emerged from the present study (Table 6) is the significant relationship between teachers' age, years of experience and gender, and teachers' perceptions of competencies needed in terms of knowledge and skills.

Data confirmed research (Super, 1957; Schlechty & Whitford, 1983; Sikes, 1985, cited in Ball & Goodson, 1985; Huberman, 1985, cited in Kremer-Hayon, Vonk & Fesslar, 1993; Burden, 1986; Huberman, 1988; Little, 1989; Leithwood, 1992) that teachers of similar age, years of experience except for gender share like experiences, perceptions, needs, satisfactions, frustrations and concerns. As they grow older, the nature of their needs alters in a predictable pattern that are comparable to teachers working in different education systems in different countries at different times (Butt, 1984; Connelly & Clandinin 1988; Nias 1989; Holly 1989; Gudmundsdottir, 1990; Carlgren & Lindblad 1991; Elbaz, 1991; Tripp, 1993). Noteworthy is data on male and older teachers that showed their low interest in CPD (Table 8), implying the need to pay attention to ways to increase their CPD participation.

Taken together, the findings imply the stages of career-cycle development and teacher development suggested by previous research. The results demonstrate a direct relationship between teachers' professional development needs and career-cycle. A formal CPD and individual career development plan for all teachers, by age, years of experience and gender, based on assessment of needs, by young and less experienced teachers, together with strong inductive support would be welcomed by Singapore teachers (see Interviews, p98-107). It is imperative that for CPD to be effective, it

must focus on teachers' needs by age, years of experience and gender, through individual growth and career ladders plans.

➢ Components of An Integrated CPD Programme

Since teachers prefer collegial, peer-related and self-chosen activities that are related to their professional duties, according to Leithwood (1992), if teachers are to truly benefit from CPD, it makes sense to plan CPD experiences and provide opportunities for them to develop as thoughtful professionals. Such opportunities lie in building a set of conditions to develop a culture of collegiality, trust and support for teachers' self-directed learning and to provide a variety of reflective activities for disciplined inquiry. Challenging teachers to be experientially involved, discussing the whys and hows of what they do and sharing experiences in peer support groups, mentoring and clinical supervision are effective means to develop their ability to think abstractly.

Collaboration, 'the integration of people and ideas' (Little, 1986, cited in Hyde & Pink, 1992) can hence form the linchpin in quality CPD programmes, with research support networks set up for teachers to share ideas, formulate strategies, provide feedback and set up joint classroom research projects. Not so useful are Role Plays/Simulations and Quality Learning Circles, suggesting the need to review these modes of operation. More effort must be made to shape teachers' mental models as self-directed, reflective and experiential learners and to encourage them to keep up with reading and writing professional publications, and lifelong learning.

Implications for Teachers

➢ Motivators and Challenges

This study shows low self dependence in Singapore teachers for CPD and underscores the importance of teachers to take responsibility for their lifelong learning, in the face of major rapid changes in Singapore. Teachers acknowledged that the recent challenges 'imposed' from inside and the strong mandate from MOE to develop a thinking nation, can undermine teacher cultures, causing them to feel 'distressed, discouraged and demoralized' (Ms Sun, female, 38 years old, 13 years of teaching experience, p113). Thus, exhortations to address the problem at multi-levels were urged: individual, school and system levels, similar to findings by West-Burnham & O'Sullivan, 1998).

At the individual level, teachers, especially male and older teachers, could be motivated to acquire the necessary knowledge and expertise and empowered to formulate their own CPD plans, since teachers are the ones who know their own skill level and thus would be aware of their own needs. Researchers (Calabrese & Bowser, 1988; Lambert, 1989) have argued that training that 'belongs' to the learner act as powerful vehicles for meaningful, lasting and important growth experiences and that teachers need to take ownership of their own training to be more effective to benefit pupils and schools.

At the school level, teachers' training must be well co-ordinated and related to both teachers' current and long-term needs and school improvement needs within a total learning environment, where teachers feel valued and recognized and motivated to participate actively in CPD (R-Adm Teo, 1997). Support in the form of suitable

schedules, sites and tangible rewards are critical (Swenson, 1981; Wood, McQuarrie & Thompson, 1982; Korinek, Schmid & McAdams, 1985; Wu, 1987). Given that Singapore teachers uphold the Asian mentality to be 'very obedient and unquestioning', of vital importance then, are opportunities afforded at system levels to continue to encourage them to speak up and to work as learning partners (Day, 1999; Ainscow et al, 2000).

Male and older teachers appeared to be less positive about changes, although generally all teachers held the belief that they were critical change agents and good role models and that professional training would promote school improvement (Ms Lee, 26 years old, 1 year of teaching experience, p88). At the MOE level, measures must be taken for policies to be accurately translated at ground level. Teachers might be encouraged to provide feedback (Ms Boo, female, 35 years old, 10 years of teaching experience, p93). The starting point for teachers to be involved in the implementation and management of change is to encourage all to change their mindset and to attend on-going training more actively. Additionally, needs based, job relevant, substantial and carefully-designed training, with increased support from Principals, need to be organized to institutionalize the changes (see Interviews, p119-124).

Implications for School Administrators

- Systematic Administrative Support

Currently, the school CPD policy is aligned to the MOE policy for every teacher to be given the right to attend at least 100 hours of training a year. Teachers attend courses identified by supervisors and do not totally have a choice of what

course to apply for.

The study highlights the importance of Principals for successful CPD, similar to findings by researchers (Crandall, 1982; Fullan, 1982; Leithwood & Montgomery, 1982; Goodlad, 1984; Goldring & Rollis, 1993). Given the importance of job-related learning and for teachers to work out their roles as vital change agents and good role models in the face of educational changes in Singapore, Principals must take strong leadership to promote CPD. With the new school management governance and new autonomy, Principals should play important roles as consultants and learning facilitators, putting in place a total training plan and a systems review for more focused training efforts aligned to long-term teacher and school improvement goals.

They can act as task and process facilitators (Caldwell, 1986) to internally shape a culture to support staff to give feedback through the ESS, to impart new ideas, to transfer new learning into their practice and to follow up into school annual plans. They must manage accurately teachers' perceptions about the Singapore training policy and communicate with teachers about how best to draw on the opportunities provided within the MOE training policy and how to address their own CPD needs systemically.

They can act as resource providers by forming peer support groups, perhaps even encouraging male and older teachers to take a lead as peer leaders, matching teachers' needs with CPD activities, providing suitable resources, released time, paid leave, a half-day off from school and free teaching load during workshops, for

teachers to use new ideas and to carry out action research in classrooms (Guskey, 1999).

They might act as coaches to shape teachers in their new roles in the new economy to bring about individual and collective efficacy, discovering better ways to promote the TSLN vision, continually learning how to learn and solve problems together and to collaborate with parents. These are important as the acceptance of new practices occurs only if it is time and cost effective and fairly easy to use in the classroom, and if it is immediately clear that it has the desired effect of improving student learning or behavior.

Another critical area that Principals can play a role in CPD is as catalysts for change, in the shaping of schools of the 21st century into a learning community. One first step is to build a shared vision for lifelong learning into jobs at all levels, to achieve the TSLN vision. The importance of shared values has been cited repeatedly in studies of effective leaders and excellent organisations (Peters & Waterman, 1982; Sergiovanni, 1984; Deal & Peterson, 1990). Secondly, through modeling and structuring a learning culture, empowered Principals can instill skills and values of self-analysis and reflection so that teachers can engage in these activities independently for their own benefit. In short, Principals serve as the key to successful CPD.

Implications for Teacher Educators

- Types and Forms of Activities

A vital area was the attention given to preferred types of CPD activities (Formal, Informal, Nonformal and Self-Directed). It is important to pay attention to how these activities can be better developed by schools to build up Singapore teachers professionally. For example, whilst Formal Activities were found to be useful by most teachers, there is still the challenge to continue to provide good speakers, challenging, interesting and varied modes of training for teachers to inquire, participate, or create (see Interviews p98-107).

Again, the seven topmost ranked suggested activities, that are collegial peer-related and self-chosen, can be used as a springboard to motivate teachers to attend CPD more keenly (Table 16). To help the transition of new teachers, a formal induction programme and a handbook on skills, together with increased exposure to new initiatives and teaching for certain content subjects can be offered at cluster levels.

For CPD to succeed, it is seemingly obvious that teachers have individual differences in terms of identified needs and learning styles so their growth experiences must be individualised. The findings of the present study suggest the importance of establishing the professional development needs of teachers in pre-service as well as in-service teacher education. Instituting CPD activities that are needs related, job relevant and management supported and monitoring the needs of teachers and their preferred learning styles for individual growth, should take place

on a continuous basis as suggested by researchers (Cook & Campbell, 1979; Loucks-Horsley et al, 1987; Prince & Taylor, 1995).

One of the core goals of effective CPD is indeed teachers' perceptions of the practicality of new teaching practices that influence later implementation. NIE can then collaborate with teachers as learning partners in higher academic practices such as relevant research projects (Nonformal and Self-Directed Activities) to provide opportunities to reflect and transfer skills to the classroom. According to Strong (1990), the reason is that a practice that teachers view as fitting comfortably within their preferred way of teaching is more likely to be adopted in actual practice. Conversely, if teachers view a practice as difficult or complex or if they are not convinced that it is worth the effort to use it, the practice will not be implemented. Worse still, the result can be mental stagnation, isolation and lowered teacher morale (Alfonso & Goldsberry, 1982; Rodriguez & Johnstone, 1986; Wideen & Andrews, 1987).

Sparks too (1986) believes that CPD activities undertaken in isolation from teachers' on-going classroom responsibilities seldom have much impact on teaching practices or student learning. Schools can therefore structure sharing of resources and materials and organize training to be job-related and to arrange sharing-time for teachers to share their experiences and challenges. In this way, CPD can attend to teachers' philosophical acceptance, self-efficacy, interest and the importance of the suggested practices during in-service training.

Implications for Programme Designers

➢ Training Menu

Programme designers can present a menu of training components for teachers to choose from, with appropriate timing and preferred venues. Teachers' expressed preferences for training that include various modes such as concrete practices, job-relevance, control over their own learning, small-group informal sharing and a safe, non-threatening environment, need to be addressed (see Interviews, p152). So, if teachers are asked to devote time and energy to learn and to reflect on new concepts, there should be compelling evidence to assure teachers that the new learning is job-related and that it will provide them with specific ideas or techniques that are successful with students.

The study presents a clear picture that poorly planned, adhoc and single workshops with no follow up are ineffective and a waste of resources, (see Interviews, p119-124), confirming findings by Showers (1985) that such kinds of training generate little growth. The length and intensity of training therefore need to be tailored to the types of practices being recommended.

The best schedule seems to be to offer workshops spread out over time and made available on an as-needed basis and offered throughout the year (Mr Poon, male, 39 years old, 18 years of teaching experience, p105), similar to research findings (Sparks & Loucks-Horsley, 1989; Pasch & Harberts, 1992; Dechant, Marsick & Kasl, 1993). One emphatic message is that teachers need intimate, small-group sharing and problem-solving sessions with peers, colleagues and leaders, to discuss problems and successes. This is congruent with findings by researchers

(Sparks & Loucks-Horsley, 1989; Pasch & Harberts, 1992; Dechant, Marsick & Kasl, 1993) that small groups essentially boost confidence and provide support for change in a safe environment. Sparks (1986, p224) believes that 'the provision of objective, non-threatening peer-observation activities boosts the effectiveness of normal, workshop-based in-service training.'

Implications for Policymakers

- Support Functions

Puch (1985) and Day (1999) tell us that important policymakers, such as the MOE, must initiate a process to build caring relationships with teachers; prepare them for CPD; chart their career development paths; create more opportunities for job enrichment and job enlargement and offer a menu of awards for them to choose from. These are: tangible benefits such as recognition and awards for deserving teachers and intangible rewards such as helping teachers to balance time between school and family life (Asayesh, 1993; McCarty, 1993).

Since the survey shows that workshops on interaction, instructional techniques and managing may be needed by young and less experienced teachers who are weak in subject matter expertise, inductive support is hence vital. With the current emphasis on the teaching of higher order thinking skills and the use of IT, new understandings and skills may be needed by teachers who, herewith, have not been asked to teach at such levels (Ms Lee, female, 26 years old, 1 year of teaching experience, p90).

Section Three: Recommendations

This study has generated interesting and significant findings with respect to the sample of teachers surveyed. Based on these findings, a framework for a school-focused CPD model within the Singapore context is recommended. This framework can be adopted by policymakers, programme designers, teacher educators and teachers.

1 Ensure a Relevant, Well-designed and Comprehensive CPD Programme

- Programme Relevance

The content of the CPD programme that supports teachers' development will depend upon teachers' needs for effective teaching and skills and their new roles as change agents to facilitate learning in the new knowledge-based economy. Content mastery is among one of the many components needed by teachers as they move up to new roles and levels on career ladders.

The training content for teachers taking on staff developer roles might then include skills and knowledge to meet teachers' needs on content-specific effective practices, and programme evaluation procedures through annual on-line surveys. As teachers move near the top of their career ladders and begin to share administrative responsibilities, they will need training in leadership skills such as planning, preparing budgets and conducting meetings (Eraut, 1987; Heitmuller, Leuzinger, McAfee, Smith & Pajak, 1993) and mentoring (Ryan, 1987; Cooke & Pang, 1991; Cole, 1997).

➢ Programme Design

Since there is considerable evidence that little growth occurs as a result of a single workshop on a given topic, the programme design should be systematic, properly scheduled and conducted in suitable venues rather than an adhoc or a 'one-off hit'. It should be a long-range model, linking teachers' individual needs with school goals, in an on-going and coherent manner. The 'planned variation' design (Harris, 1985, p219) or better known as the 'supermarket delivery system' (Hagen, 1981, cited in Harris, 1985, p230) with its compendium of activities can be a promising model to meet Singapore teachers' professional needs.

The use of small groups provides an excellent vehicle for collaboration. Small-group sharing, peer visitations, mentoring, team teaching and coaching for reflection where there is intimacy and an opportunity to share their experiences collegially, together with suitable resources and materials provide a safe, non-threatening environment, where risk taking and experimentation can be encouraged (Little, 1981a,b, 1985a,b; Brookfield, 1986; Caldwell, 1986; Wood, Caldwell & Thompson, 1987; Roy & O'Brien, 1991).

One of the most powerful means by which CPD can benefit teachers and schools is through a school-wide needs assessment. The real challenge is establishing a shared vision that reflects the school's philosophy regarding the goals of CPD and teachers' preferences and fostering decision-making. This means that teachers should be empowered to participate in decision-making on strategies for action.

According to Fullan (1993) staff participation in CPD programmes has been a

major factor leading to success. Thus efforts should be made by school leaders to encourage and elicit such teacher involvement. Currently, teachers in subject committees, under the leadership of a HOD or subject co-ordinator, are already in a position of potential involvement as they are required to contribute as committee members to identify weaknesses in their programmes and to devise remedial action to correct any deficiencies.

As noted by Cross (1981) and Rogers (1987), not only were teachers able to identify their professional development needs, but, to a lesser degree, they volunteered to take part in CPD programmes that addressed those needs. In such situations, teachers found they had something (an experience or an effective technique) to offer other teachers. This, in turn, is a great self-esteem booster and a source of moral support. Just as important, they often picked up something new to try from their colleagues.

- Programme Comprehensiveness

Based on the research, it was concluded that a comprehensive CPD programme should consist of fourteen components. The essential features of the school focused CPD model, in order of importance, are:

1 Formation of Peer Support Groups

2 Peer Coaching

3 Mentoring

4 On-Going In-service

5 Demonstration Lessons

6 Team Teaching

7 Coaching For Reflective Thinking

8 Teachers' Handbook Of Skills

9 Conferencing

10 Detailed Orientation

11 Focused Study Groups

12 Quality Learning Circles

13 Classroom Observation

14 Role Plays/Simulations

2 Develop a School-focused CPD Model

The specific factors identified from the present study serve as reference for planning the CPD programme about possible areas to look into. For example, there were areas of personal needs to develop skills. School factors such as time constraints, distance, heavy workload and problems with balancing work and family commitments were considered to be predominant factors operating in a deterring mode contributing to undesirable outcomes like fatigue, loss of interest, even stress. Since participants in in-service training have individual differences in terms of identified needs and learning styles by age, years of experience and gender, teachers' growth experiences must be individualised.

The most obvious conclusion one might draw from the findings is that steps should be taken whenever possible to avoid these barriers. A multi-faceted school-focused model based on principles of growth planning to develop teachers as lifelong

learners should be first steps to planned change. During the stages of a teachers' career cycle, 'establishing', 'enhancement' and 'maintenance' functions (Schlechty & Whitford, 1983, p58) can be established to meet the needs of individuals and schools so as to foster a CPD partnership for mutual benefit.

3 Use a 'People-Oriented' Approach

A 'people-oriented' or learner-centred approach to CPD must be adopted by the school (Day, 1999). Help must be given to all teachers: beginning and senior, male and female, in order to meet the changing needs of society and the school environment. An added advantage to a people-oriented CPD programme is both the intrinsic and extrinsic motivation, by setting long-term targets. This move ultimately provides for the involvement and growth of individuals that brings about a continuous process of improvement, over time.

4 Provide Systematic Administrator Support

Administrative support has been demonstrated as extremely important to CPD and teacher improvement. Researchers (Richardson, Flanigan & Prickett, 1990; Fullan, 1991) claimed that the Principal is critical because better CPD means better organisations: the Principal must be fundamentally part of organisational development. These findings point clearly to the necessity of adequate organisational

support for professional development especially when career ladder plans are established.

Support functions include clarifying the goals of schools and change programmes, protecting teachers from competing demands on their time, providing suitable timing and venue, providing easy-to-locate materials and advisors, making the changes a high priority by publicly emphasising their importance and having a person in leadership serve as a catalyst (Crandall, 1982; Leithwood & Montgomery, 1982; Fullan, 1982; Goodlad, 1984; Goldring & Rollis, 1993).

Specifically, Principals should ensure that certain processes and supports are provided within a learning community for lifelong learning. First, they can actively shape teachers' mental models in decision-making about possible areas for study and improvement, through the different types of CPD activities for teachers to grow as reflective, experiential, collaborative and self-directed learners. Second, they should transmit a shared vision to acquire new skills through a learner-centred culture. Third, they should set up a systemic system and encourage collegial collaboration among teachers. Finally, they should improve staff's personal and professional well being through individual plans.

Section Four: Significance of The Research

Significant data have been yielded by this research with practical implications for teachers, teacher educators, programme designers and policymakers.

In view of the rapid changes in Singapore, it is timely to remind ourselves that that 'change is a process, not an event' (Dettmer, 1986, p107) and that CPD is a powerful vehicle for implementing change. The effectiveness of change depends upon a holistic approach to determine the major CPD needs, strategies and philosophies. A major component that is essential to the success of any in-service programme is for human resource programme designers and administrators to craft a healthy relationship to initiate and manage change.

Since Singapore teachers differ in important ways and react differently to educational environments, preferring various levels of structures and task complexity; attention must be given to their personal needs, preferred types of CPD activities, feedback about performances, motivators and challenges that influence participation in CPD. The study concludes that CPD is effective when significant descriptors can be identified as components of effective CPD in Singapore primary schools. The findings add to extensive literature that the programme content and design should be planned in response to assessed needs, to the current age, years of experience and gender of teachers, and not designed or implemented in an adhoc manner.

Section Five: Contributions and Directions for Future Research

The present study has contributed in several ways to the literature on CPD and its relation to school and teacher effectiveness. From the theoretical perspective, it has demonstrated the relevance of the Singapore researcher's conceptualisation of the conceptual model based on current views on CPD (Huberman & Miles, 1984; Sparks

& Loucks-Horsely, 1989; Guskey & Sparks, 1996). The study adds to our understanding of the interactive and reciprocal relationship between the three dimensions of CPD (personal, school and CPD).

Results provide vital information on how Singapore teachers perceive school factors and CPD factors and their own needs, the Role of Principals, School People and School Resources and how teachers' training can be negotiated around these perceptions. Specifically, one of the significant contributions to research is the finding on the relationships between school factors and CPD activities. A second is the preferred components in an integrated CPD programme for Singapore use. A third is the personal qualities of effective Singapore teachers.

As the teacher shortage develops over the next decade and as demands for improvement in education continue, we need to find a productive and effective way to assist teachers in making a smooth transition through varying stages of professional development. This study has yielded significant data which contribute to the understanding of how age, years of teaching experience and gender can be related to individual growth plans and career ladders. Additionally, the study identifies key practices that can contribute to effective CPD.

Several lines of research are suggested by the findings of this study. One, future research may be directed to training and development issues to help identify, assess and help teachers to develop key competencies to perform current or future jobs. Research efforts may be directed to understanding the function of CPD in promoting the cognitive development of teachers. Giroux (1988) argued for teachers

to be 'transformative intellectuals' (p59). The creation of such a perspective raises the issue that the enhancement of teachers' cognitive skills will lead to direct improvements in student learning. In this aspect, West-Burham and O'Sullivan (1998) argues for a meta-curriculum in which these specific skills are contextualised. Topics can include inductive and deductive logic, critical and creative thinking, comparative analysis, problem solving, contextualisation and generalisation.

Second, investigation can be conducted to examine the impact of effective CPD on the actual outcomes of teaching: the three-way interaction of teacher perceptions and behaviour, student perceptions and behaviour and characteristics of learning activities, short-term and long-term objectives and cognitive and educational outcomes and what students have learned including knowledge, skills, attitudes and values as a direct or indirect result of what teachers have done (Wragg, 1987).

Third, an area for investigation is to determine the major human resource planning needs, define the tasks, strategies and philosophies, based on research, educational theory and experience. Since teacher education is a career-long process, individual teacher's learning styles can therefore be identified to see how activities can be structured in a systematic fashion for each of these learning styles. Another area needed therefore for further investigation is to track individual career needs, build up a personnel information base and match people with their career needs and capabilities with jobs and career paths.

Furthermore, key players must realise that they must address the organization as a whole to be effective. They must understand that positive change is based on

both individual and organisational needs, that individual change is accompanied by change in school culture, and that individual improvement leads to school improvement, and vice versa.

This study has pointed to the need for peer support as essential to programme success. The findings on the evolutionary nature of change in school culture and the role of peer-leaders are considered exploratory rather than confirmatory, prompting the need for further study and verification to understand this change, to facilitate strategic planning efforts, rather than a one-shot intervention - within the context of global and national changes. As such, the role of peer-leaders for successful CPD needs further exploration.

Conclusion

The process of CPD should be seen in the perspective of a proper educational management programme and structure - as a continuum that includes pre-service education, induction and continuing professional development, at personal, collective and school levels.

The proposed CPD programme can serve as a model for other schools in their commitment to promote the personal and professional well being of their teachers. It is hoped that the recommendations and suggestions and the CPD model based on findings of this study will enable key players to keep CPD a priority in education and successfully develop CPD plans that will benefit all parties involved and discontinue

the waste of resources and potential we now call 'Continuing Professional Development'.

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APPENDIX A

DEFINITION OF TERMS

Personal Factors

Personal Factors refer to intrinsic factors such as the personal needs or skills and personal 'good qualities' of effective teachers.

Teachers' Needs refer to the skills or behaviours required for teacher effectiveness, such as planning, instructional techniques, managing, interacting, assessing and relationship with community skills.

Years of Teaching Experience refer to the number of years of experience a teacher has on the job.

School Factors

Principal refers to the head of the school.

Leaders refer collectively to the management team in a primary school. The team consists of the Principal, Vice-Principal and Heads of Departments that set the direction for the school, discuss teachers' CPD needs, rank, and recommend promotion and chart individual teacher's career path.

Colleagues refer mainly to the teaching staff in schools such as the Level Co-ordinators, Experienced Teachers and Peers.

School Resources refer to the types of resources in schools such as MOE materials, commercial or teacher-made materials, school library (teacher-resources), Computer Lab (software) and LAN or Internet services, and the venue and timing of CPD activities.

CPD Factors

CPD Activities refer to both Academic Development Activities and Professional Development Activities.

Academic Development Activities refer to two types of independent activities: formal and informal.

Formal Activities require teachers to sit in normal school staff meetings, school-based workshops and in-service workshops to listen to speakers, as part of their teaching duties.

Informal Activities are activities that are freely chosen by teachers for self-improvement such as observing demonstration lessons; getting feedback from observations of teaching; working at level meetings to set, vet and mark test papers; presentation of theory or description of new skills; opportunities for practice after learning new strategies; viewing video tapes; opportunities to share experiences and expertise; focused support groups (study groups); peer discussions with observations and coaching; simulations or role plays; learning circles, that is, identify, investigate and report on a school-related problem or area of special interest; mentoring and quality learning circles using WITs tools.

Professional Development Activities refer to two types of activities: Self-Directed and Nonformal. These are job-related professional activities.

Self-Directed Activities require teachers to construct their own learning environments with or without help from others in informal situations to diagnose their own learning needs, establish goals, identify resources, select learning activities and evaluate their learning. These activities require teachers to read professional journals, write and review textbooks and journals, observe other teachers teaching and give feedback and attend Open University or Masters courses.

Nonformal Activities are activities that require teachers to learn as experiential learners, collaborative colleagues and reflective practitioners.

Experiential learners refer to teachers who learn by or through active experiences such as theory presentation and demonstration, feedback, practice and coaching.

Collaborative Colleagues refer to teachers working together or in co-operative groups as peer coaches to discuss and share experiences.

Reflective Practitioners refer to teachers who engage in conscious mental return to the experience to examine one's behaviour, ideas and feelings, to continuously reflect on their teaching methodologies, to seek new knowledge and to constantly find better ways of guiding students in their learning.

Others

Teacher Effectiveness refers to the ability of the teacher to structure learning activities that result in students learning and meeting success.

Teacher Behaviours refer to the manner in which the teacher acts and performs responsibilities as teacher.

Personal Mastery refers to the ability of individuals to clarify, articulate and create what is important to the individual.

Building Shared Vision refers to the ability of the team to develop shared images of the future they want to create together, and of the principles and strategies that enables them to get there.

Mental Model refers to the ability of individuals to surface, reflect, clarify and improve individual's internal pictures of the world and of reality, and to understand how they shape responses and actions.

Team Learning refers *to the a*bility of individuals to transform conversational and collective thinking skills, so that the collective ability of the team is higher than the sum of individual members' talents.

Systems Thinking refers to the ability of teams to see how different variables are inter-related, how they impact an issue and where the points of leverage for action are.

APPENDIX B

PRE-SURVEY INTERVIEW QUESTIONS

During the preliminary interviews, the dialogues focused on structured and guided questions such as:

Question 1:
What, in your opinion, are personal qualities of effective teachers? Why do you say so?

Question 2:
What are the essential skills needed by teachers to address the challenges of the TSLN vision? Why do you say so? For 'Thinking Schools', for National Education, and for the IT Masterplan?

Question 3:
What should an effective CPD programme emphasise? Why?

Question 4:
How might the concept of the school as a learning organisation enhance the CPD programme to meet teachers' needs? Why?

Question 5:
What kinds of CPD activities are useful, for what reasons and how?'

APPENDIX C

SURVEY QUESTIONNAIRE

CPD For Singapore Teachers and Effective Schools

Dear Colleague,

The study is conducted to assist teachers in self-efficacy and to meet the challenges of the TSLN vision. This study can provide useful insight on, and information, for developing the professional needs of teachers. I am most grateful for your taking time to respond to this questionnaire. Your frank and objective opinion is sought about each item in the following pages concerning the personal qualities, behaviours and specific needs for teaching effectiveness. Your response to the survey questionnaire will be of immense value.

Please do not discuss the questions with your colleagues before completing and submitting your answers: let your answers be your own personal views. You may be rest assured of complete confidentiality of your responses. You are also provided with anonymity as your responses will not be singled out for individual study. Instead, they will be pooled together with those of the others in the school and the combined data on a separate sheet will be used for analysis.

If you have any questions regarding the survey, please do not hesitate to contact me at 7596813 or e-mail me at Irene_Ho@moe.edu.sg. Thank you very much for your assistance and co-operation.

Sincerely
Irene Ho
Peixin Primary School
2000

CPD For Singapore Teachers and Effective Schools

Please complete the following questionnaire. The questionnaire is designed to determine the content, approach and context that will help schools to plan effective staff development programs for teacher efficacy. Your candid responses will be most invaluable.

PART ONE
DEMOGRAPHIC DATA

I PERSONAL PARTCULARS

Please TICK (/) in the box provided to indicate your answer.

1 Age:
- 20 - 30 ( )
- 31 - 40 ( )
- 41 - 50 ( )
- 51 - 60 ( )

2 Sex:
- Male ( )
- Female ( )

3 No of years of teaching experience:
- 1 - 3 years ( )
- 4 - 10 years ( )
- 11 - 20 years ( )
- 21 - 39 years ( )
- $\geqslant$ 40 years ( )

II CHARACTERISTICS OF EFFECTIVE TEACHERS
PERSONAL QUALITIES

1 Please LIST the personal qualities that you feel teachers must possess to be effective:

PERSONAL QUALITIES	PERSONAL QUALITIES

III TEACHERS AS ADULT LEARNERS

1 Please indicate **to *what extent you have been involved*** in the following Activities under the various types of learners.
Please TICK (/) the number which indicates your answer.

Great Extent of Involvement	**GE**	**= 4**
Some Extent of Involvement	**SE**	**= 3**
Little Extent of Involvement	**LE**	**= 2**
No Extent of Involvement	**NE**	**= 1**

ACTIVITIES	4	3	2	1
Self-Directed Learner				
Read professional journals, write, review textbooks, journal article				
Attend certification courses (e.g. Open University or Masters courses)				
Observe other teachers teaching and giving professional feedback (teachers' portfolio)				
Collaborative Colleague				
Attend meetings as a committee member, workshops, conferences				
Reflective Practitioner				
Reflect continuously on teaching methodologies				
Seek new knowledge and constantly find better ways of teaching				
Experiential Learner				
Experiment with new approaches/innovations to improve teaching				
Present innovations at Contact Time, workshops, conferences (e.g. IPW)				

PART TWO
FACTORS INFLUENCING EFFECTIVE STAFF DEVELOPMENT

I PERSONAL (CONTENT) FACTORS

1 KNOWLEDGE (SPECIFIC NEEDS)

Please LIST the knowledge you need to be effective in promoting the TSLN culture in schools:

KNOWLEDGE (CONTENT)	KNOWLEDGE (CONTENT)

2 SKILLS (SPECIFIC NEEDS)

1 Please TICK (/) the response for each item that most nearly indicate your level of need for assistance in the categories of skills.
Choose among:

Great Need	GN	= 4
Some Need	SN	= 3
Little Need	LN	= 2
No Need	NN	= 1

Planning	4	3	2	1
Planning and preparing lessons				
Delineating learning objectives				
Content knowledge				
Determining procedures				
Planning instruction for different ability groups				

Managing	4	3	2	1
Maintaining classroom discipline				
Increasing success rate through a positive climate				
Managing group/individual work				
Managing time				
Checking for understanding				
Monitoring student progress				
Managing student reward system				
Managing co-operative learning				
Organising and conducting CCAs				

Instructional Techniques	4	3	2	1
Stimulating thinking & process skills				
Explaining and informing				
Questioning and responding				
Maintaining pace of lesson				
Lesson closure				
Use of technology (computers)				
Drill and practice				

Interaction	4	3	2	1
Arousing interest				
Encouraging participation in IPW, IT, NE				
Communicating student achievement/problems				
Counselling to guide students in personal problems				

Assessing and Providing Feedback	4	3	2	1
Using and giving feedback				
Monitoring student understanding				
Assigning homework				
Marking students' exercises and work				
Setting tests and exam papers				
Interpreting test results				

Relations with Community	4	3	2	1
Getting along well with your colleagues				
Getting along well with the administration				
Getting along well with the parents				
Communicating expectations to parents				
Managing conflict with parents				

II SCHOOL (CONTEXT) FACTORS

SCHOOL PEOPLE

1 Please indicate to what extent the following People were helpful to you.
Please TICK (/) the number which indicates your answer.

Great Help **GH** = 4
Some Help **SH** = 3
Little Help **LH** = 2
No Help **NH** = 1

People	4	3	2	1
Principal				
Vice-Principal				
HODs				
Level Co-ordinators				
Experienced Teachers				
Peers				

2 In what ways have they been helpful?

_____

_____

_____

SCHOOL RESOURCES

3 Please indicate to what extent the following Resources have been helpful to you.
Please TICK (/) the number which indicates your answer.

Great Help **GH** = 4
Some Help **SH** = 3
Little Help **LH** = 2
No Help **NH** = 1

RESOURCES	4	3	2	1
MOE Materials				
Commercial or teacher-made materials				
Materials made during pre-service				
School Library (teacher-resources)				
Computer Lab (Software)				
LAN/Internet services				

4 In what ways have they been helpful?

_____

_____

_____

III PROCESS (CPD) FACTORS: TYPES AND FORMS, FREQUENCY OF STAFF DEVELOPMENT ACTIVITIES

TYPES OF ACTIVITIES

1 Please indicate to what extent you have been involved in the following Activities. Please TICK (/) the number which indicates your answer.

Great Extent of Involvement **GE** **= 4**
Some Extent of Involvement **SE** **= 3**
Little Extent of Involvement **LE** **= 2**
No Extent of Involvement **NE** **= 1**

ACTIVITIES	4	3	2	1
Normal school staff meetings				
School-based workshops				
In-service workshops				
Observing demonstration lessons				
Feedback from observation of your teaching				
Working on committee meetings (to set, vet and mark papers)				
Presentation of theory or description of new skills				
Opportunities for practice after learning new strategies				
View videotapes				
Opportunities to share experiences and expertise				
Focused support groups (study groups)				
Peer Discussion/Observation/Coaching				
Simulations or Role Plays				
Action Research Learning Circles (identify, investigate, and report on a school-related problem or area of special interest)				
Mentoring				
Quality Learning Circles (WITs)				

2 List the ways in which these activities have been helpful

_____

_____

_____

3 When have these activities been conducted (eg. beginning of year, end of year, middle of year, term time etc)?

4 Where have these activities been conducted (eg. in school, outside school such as Teachers' Network, cluster schools etc)?

5 Which venue do you prefer? Why?

IV OTHER FACTORS

1 Please LIST any motivating factors that encourage you to achieve 100 hours of training through staff development activities, in order of importance:

Motivating Factors	Rank Position	Motivating Factors	Rank Position

2 Why have these factors motivated you?

3 Please LIST any problems/challenges that hinder you from achieving 100 hours of training through staff development activities, in order of importance:

Challenges	Rank Position	Challenges	Rank Position

4 Did you feel discouraged as a result of any of the problems encountered?

Yes ( )
No ( )

5 If yes, please comment on how you felt.

_____

_____

_____

V ROLE OF PRINCIPALS

1 Please indicate **to *what extent you perceive your Principal has been involved*** in promoting staff development in your school.
Please TICK (/) the number which indicates your answer.

Great Extent of Involvement **GE** **= 4**
Some Extent of Involvement **SE** **= 3**
Little Extent of Involvement **LE** **= 2**
No Extent of Involvement **NE** **= 1**

ACTIVITIES	4	3	2	1
Participate in setting up a structure for a systemic staff development plan that is linked to school goals				
Actively work at establishing a positive school climate for continuous learning (support, praise colleagues etc)				
Assume leadership in staff development activities (instructional innovations etc)				
Involved in developing/implementing of new curricular/instructional ideas				
Carry out inter-class visitation, peer coaching, demonstrations/ feedback/follow up				
Has an annual plan for your continuing professional development				

PART THREE
COMPONENTS OF AN EFFECTIVE STAFF DEVELOPMENT PROGRAMME

I COMPONENTS

1 Please RANK the following suggested components for a comprehensive and integrated staff development programme:

Components	Rank Position
Peer Coaching	
Peer Support Groups	
Mentoring	
On-Going In-service	
Classroom Observations	
Conferencing	
Team Teaching	
Demonstration Lessons	
Coaching for Reflective Thinking	
Detailed Orientation	
A Teachers' Handbook of Skills	
Focused Study Groups	
Quality Learning Circles	
Role Plays/Simulations	

II ANY OTHER COMMENTS

1 Please write any other comments that you may have:

_____

_____

_____

Please check that all questions have been answered.

\- Thank you -

APPENDIX D

POST-SURVEY INTERVIEW QUESTIONS

The following are Post Survey Interview Questions used in the discussion with twenty-eight teachers:

Question 1:
These personal qualities were also cited. Why do you think Singapore teachers have included these as essential personal qualities of effective teachers?

Question 2:
Several needs were cited (planning, managing, assessing and relations with school/community). Why do you think these needs have been indicated by teachers?

Question 3:
Certain kinds of knowledge are needed for effective teaching. How can these knowledge and skills help teachers in working out the TSLN vision? ('Thinking Schools', NE, IT Masterplan, ability-driven education).

Question 4:
How important are these knowledge and skills to the TSLN vision? Why?

Question 5:
What kinds of activities do you prefer: formal, informal, nonformal, self-directed? Why do you say so?

Question 6:
Why do you think the components for a comprehensive CPD programme activities are ranked as follows?

Question 7:
What are problems teachers face in growing as reflective, self-directed, experiential, collaborative learners?

Question 8:
Why are these problems considered to be significant in motivating staff participation?

Question 9:
What can a) principals and b) teachers do to help teachers overcome the challenges cited in the study?

Question 10:
How can MOE, principals and teachers better provide for effective CPD?

Question 11:
How should an effective CPD design be structured for teacher effectiveness in Singapore primary schools? What are the essential steps for teacher effectiveness in Singapore primary schools? (Prompts: Goals? Strategic Planning? Policy? Delivery Model?).

Question 12:
How might principals and teachers use the concept of the school as a learning organisation to promote lifelong learning to enhance effective CPD practices? Why? (Prompts: systems thinking, mental model, shared vision, personal mastery, team learning).

Question 13:
How can the role of the School Mentoring Co-ordinator be further explored to be more effective?

Question 14:
How can teachers be further motivated to participate in staff development?

Question 15:
Would it be relevant to have several levels of training? How can this be done? By age? By gender? By years of experience?

Question 16:
How have you benefited from staff development? Why?

Question 17:
Why is peer support groups ranked first in the recommended structure of an integrated CPD development model? How should these be shaped in the context of TRAISI?

Question 18:
How can the school work with MOE to ensure effective CPD for Singapore teachers?

APPENDIX E

INTERVIEW QUESTIONS FOR CASE VIGNETTES

The following are interview questions used in discussions with eight teachers for the case vignettes:

Question 1:
What kind of personal qualities do you think teachers need to address the educational changes in Singapore? Why do you say so?

Question 2:
What is your preferred style of learning? Self-directed? Reflective? Experiential? Collaborative? Why do you say so?

Question 3:
What kinds of activities do you prefer? Formal, Informal, Nonformal, Self-Directed? Why do you say so?

Question 4:
How do you think your principal/leaders/colleagues in the school are helpful? What about school resources (materials, timing, venue of CPD activities)? How can your school provide these better?

Question 5:
What are factors will motivate or challenge you not to participate in CPD?

Question 6:
How can your school provide better CPD opportunities in terms of activities?

Question 7:
What should the components be like for a comprehensive programme?'

APPENDIX F

ANALYSIS OF SINGAPORE TEACHERS' PERCEPTIONS OF SPECIFIC NEEDS

Activities	Whole Group		Age Group								Experience										Gender			
			1		2		3		4		1		2		3		4		5		M		F	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Planning	2.50	1.06	3.12	0.75	2.51	1.07	1.86	0.87	1.92	0.99	3.33	0.71	2.95	0.80	1.80	0.83	1.89	0.96	2.23	1.01	2.48	1.12	2.51	1.05
Planning and preparing lessons	2.39	1.05	2.95	0.73	2.38	1.06	1.84	0.94	1.87	1.05	3.17	0.72	2.79	0.80	1.64	0.77	1.85	1.01	2.17	1.17	2.33	1.14	2.40	1.03
Delineating learning objectives	2.40	1.05	2.98	0.74	2.40	1.06	1.72	0.84	1.90	1.01	3.16	0.73	2.85	0.77	1.64	0.80	1.85	0.97	2.33	1.03	2.39	1.10	2.41	1.03
Content knowledge	2.60	1.05	3.23	0.73	2.66	1.05	1.80	0.87	2.00	1.06	3.40	0.65	3.10	0.81	1.91	0.85	1.95	1.00	2.17	1.47	2.53	1.12	2.61	1.08
Determining procedures	2.41	1.05	3.01	0.72	2.41	1.06	1.88	0.83	1.84	0.91	3.20	0.71	2.86	0.78	1.69	0.73	1.84	0.90	2.00	0.89	2.39	1.06	2.42	1.00
Planning instruction for different ability groups	2.71	1.05	3.44	0.73	2.72	1.06	2.08	0.91	1.99	0.94	3.70	0.57	3.16	0.78	2.13	0.92	1.92	0.94	2.50	0.55	2.79	1.15	2.69	1.08
Instructional Techniques	2.53	1.06	3.12	0.76	2.51	1.03	1.99	0.96	1.98	1.06	3.26	0.75	2.99	0.77	1.88	0.85	1.96	1.03	2.02	1.09	2.44	1.11	2.55	1.05
Stimulating thinking & process skills	2.80	1.10	3.44	0.74	2.82	1.04	2.24	1.05	2.18	1.09	3.57	0.69	3.34	0.75	2.18	0.89	2.16	1.08	2.00	1.10	2.75	1.15	2.81	1.08
Explaining and informing	2.45	1.07	3.13	0.74	2.41	1.02	1.72	0.89	1.87	1.02	3.30	0.75	2.94	0.73	1.69	0.70	1.83	0.99	1.83	1.17	2.33	1.12	2.47	1.06
Questioning and responding	2.46	1.07	3.10	0.74	2.45	1.06	1.88	0.93	1.88	1.04	3.30	0.75	2.93	0.73	1.76	0.80	1.85	1.01	1.83	1.17	2.37	1.14	2.49	1.06
Maintaining pace of lesson	2.37	1.05	3.04	0.74	2.33	1.01	1.84	0.85	1.77	1.01	3.16	0.73	2.86	0.78	1.76	0.80	1.74	0.95	1.83	1.17	2.28	1.11	2.40	1.04
Lesson closure	2.35	1.04	3.03	0.73	2.31	0.97	1.76	0.83	1.73	1.00	3.19	0.73	2.81	0.73	1.64	0.71	1.73	0.96	1.83	1.17	2.26	1.06	2.37	1.04
Use of technology	3.05	0.85	3.27	0.74	3.05	0.91	2.92	0.76	2.81	0.89	3.36	0.70	3.34	0.73	2.64	0.93	2.76	0.86	3.17	0.75	2.91	0.95	3.08	0.83
Drill and practice	2.20	0.99	2.80	0.75	2.22	0.96	1.56	0.77	1.64	0.93	2.94	0.78	2.67	0.74	1.49	0.55	1.64	0.92	1.67	0.82	2.16	1.07	2.21	0.98

Activities	Whole Group		Age Group								Experience										Gender			
			1		2		3		4		1		2		3		4		5		M		F	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Managing	2.52	1.07	3.17	0.75	2.51	1.05	1.94	0.93	1.92	0.99	3.28	0.73	3.06	0.78	1.80	0.80	1.91	0.97	1.91	1.03	2.43	1.09	2.54	1.06
Managing classroom discipline	2.42	1.10	3.09	0.73	2.33	1.07	1.92	1.00	1.84	1.10	3.21	0.74	2.95	0.77	1.53	0.73	1.87	1.07	1.67	1.21	2.30	1.12	2.45	1.10
Increasing success rate through positive climate	2.71	1.04	3.45	0.50	2.64	0.99	2.16	0.94	2.03	1.02	3.51	0.50	3.31	0.54	1.98	0.87	2.01	1.00	2.17	0.98	2.54	1.09	2.75	1.03
Managing group/individual work	2.59	1.06	1.39	0.49	2.52	1.02	1.96	0.93	1.88	0.99	3.46	0.50	3.24	0.53	1.71	0.79	1.87	0.96	2.00	1.26	2.49	1.07	2.61	1.06
Managing time	2.45	1.10	3.16	0.73	2.36	1.03	1.96	0.98	1.81	1.08	3.26	0.74	2.99	0.77	1.71	0.79	1.81	1.03	1.67	1.21	2.30	1.10	2.48	1.10
Checking for understanding	2.43	1.07	3.12	0.75	2.40	1.02	1.80	0.96	1.81	0.98	3.21	0.74	2.98	0.80	1.71	0.76	1.81	0.95	1.67	1.21	2.32	1.10	2.46	1.06
Monitoring student progress	2.29	1.06	2.67	0.96	2.34	1.09	1.80	0.91	1.92	1.02	2.89	1.00	2.60	0.96	1.76	0.77	1.86	0.99	2.17	1.17	2.39	1.18	2.27	1.03
Managing student reward system	2.48	1.04	3.09	0.74	2.54	1.03	1.80	0.96	1.89	0.94	3.23	0.73	3.05	0.77	1.78	0.70	1.85	0.94	1.83	0.98	2.47	1.12	2.49	1.03
Managing co-operative learning	2.65	1.02	3.23	0.73	2.71	1.06	2.12	0.88	2.02	0.90	3.34	0.72	3.19	0.76	2.04	0.85	2.03	0.90	1.83	0.98	2.60	1.00	2.66	1.03
Organising & conducting CCAs	2.67	1.03	3.32	0.71	2.70	1.08	1.96	0.84	2.07	0.87	3.41	0.67	3.23	0.79	1.98	0.89	2.04	0.87	2.17	0.75	2.44	1.07	2.73	1.02
Interaction	2.58	1.05	3.19	0.71	2.58	1.03	2.07	0.95	1.98	1.03	3.35	0.68	3.04	0.77	1.99	0.83	1.96	1.01	1.79	0.98	2.46	1.08	2.60	1.04
Arousing interest	2.49	1.07	3.13	0.68	2.45	1.05	2.00	0.96	1.89	1.06	3.29	0.68	2.94	0.74	1.82	0.83	1.90	1.05	1.67	1.21	2.35	1.13	2.52	1.05
Encouraging participation in IPW, IT, NE	2.39	1.05	3.01	0.70	2.37	1.02	1.88	0.97	1.81	1.06	3.21	0.70	2.84	0.75	1.71	0.69	1.79	1.04	1.83	1.17	2.39	1.06	2.39	1.05
Communicating student achievements/ problems	2.55	1.04	3.18	0.72	2.59	0.99	2.04	0.93	1.91	0.98	3.29	0.68	3.07	0.79	2.02	0.81	1.90	0.96	1.67	0.82	2.40	1.07	2.58	1.03
Counselling to guide pupils in personal problems	2.87	0.99	3.44	0.65	2.92	0.96	2.36	0.91	2.29	0.97	3.60	0.60	3.31	0.71	2.42	0.81	2.26	0.96	2.00	0.89	2.68	1.07	2.92	0.96
Assessing and Providing Feedback	2.46	1.07	3.10	0.74	2.43	1.06	1.86	0.94	1.89	1.03	3.25	0.73	2.94	0.81	1.72	0.78	1.86	1.00	2.17	1.21	2.41	1.11	2.47	1.06

Activities	Whole Group		Age Group								Experience										Gender			
			1		2		3		4		1		2		3		4		5		M		F	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Using and giving feedback	2.48	1.04	3.08	0.73	2.46	1.07	1.84	0.94	1.97	1.00	3.21	0.70	3.00	0.81	1.69	0.70	1.93	0.98	2.00	1.10	2.44	1.05	2.49	1.05
Monitoring pupil understanding	2.46	1.07	3.12	0.73	2.38	1.07	1.80	0.91	1.93	1.01	3.23	0.75	2.97	0.80	1.67	0.71	1.90	1.01	1.83	1.17	2.40	1.15	2.47	1.05
Assigning homework	2.22	1.00	2.81	0.69	2.21	1.00	1.64	0.86	1.69	0.98	2.93	0.69	2.73	0.80	1.47	0.50	1.65	0.94	2.17	1.17	2.23	1.05	2.22	1.00
Marking pupils' exercises and work	2.41	1.10	3.03	0.75	2.38	1.09	1.96	1.14	1.83	1.08	3.16	0.75	2.90	0.84	1.71	0.89	1.82	1.05	2.33	1.37	2.40	1.13	2.42	1.10
Setting tests and exam papers	2.59	1.10	3.30	0.71	2.55	1.06	1.88	0.93	1.98	1.05	3.50	0.68	3.06	0.76	1.80	0.84	1.93	0.99	2.50	1.38	2.56	1.15	2.60	1.09
Interpreting test results	2.57	1.09	3.23	0.76	2.60	1.05	2.04	0.89	1.91	1.06	3.46	0.67	3.00	0.80	1.98	0.89	1.90	1.01	2.17	1.47	2.42	1.16	2.61	1.07
Relations with Community	2.43	1.09	3.07	0.79	2.40	1.07	1.87	1.03	1.85	1.03	3.15	0.82	2.93	0.80	1.81	0.95	1.84	1.01	1.83	1.21	2.43	1.14	2.43	1.08
Getting along well with colleagues	2.20	1.05	2.75	0.79	2.18	1.03	1.72	1.10	1.68	1.03	2.83	0.82	2.65	0.78	1.60	0.91	1.69	1.04	1.50	1.22	2.14	1.11	2.21	1.04
Getting along well with administration	2.33	1.08	2.94	0.77	2.28	1.06	1.84	1.14	1.78	1.03	2.99	0.81	2.84	0.79	1.67	0.93	1.77	1.04	2.00	1.26	2.25	1.11	2.35	1.08
Getting along well with parents	2.45	1.08	3.13	0.74	2.39	1.05	1.84	1.03	1.86	1.01	3.17	0.78	2.97	0.79	1.84	0.95	1.83	1.00	1.67	1.03	2.53	1.15	2.43	1.07
Communicating expectations to parents	2.55	1.11	3.24	0.76	2.53	1.09	1.88	0.97	1.92	1.03	3.37	0.76	3.05	0.78	1.89	0.98	1.89	1.00	2.00	1.26	2.65	1.16	2.53	1.10
Managing conflict with parents	2.64	1.09	3.30	0.76	2.62	1.08	2.08	0.95	2.03	1.02	3.40	0.79	3.13	0.79	2.07	0.96	2.01	0.98	2.00	1.55	2.60	1.13	2.65	1.08
Number of observations	310		108		87		25		90		70		86		45		103		6		57		253	