Does the International Baccalaureate's Primary Years Programme facilitate students' motivation toward self-regulatory, autonomous learning?

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Ed.D Thesis

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Sue Oates

This thesis is dedicated to Roger Taylor

For his endless love, support and encouragement
(and innumerable cups of tea!)

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FULL TITLE:

Does the International Baccalaureate's Primary Years Programme facilitate students' motivation toward self-regulatory, autonomous learning?

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No part of the material contained in this thesis has previously been submitted by the author for a degree at Durham University or in any other institution. All the work presented here is the sole work of the author.

ABSTRACT

The purpose of this study was to ascertain whether the International Baccalaureate's (IB) Primary Years Programme (PYP) motivates students to become self-regulated learners. Boerkaert's model of self-regulated learning is particularly drawn on through this research. Questionnaires were given to 20 teachers and their 404 students from twelve schools in eight countries. The student questionnaire was developed, piloted, distributed and analysed. The Problem in Schools questionnaire was given to the teachers of the students in the study to ascertain their stance toward autonomy support. Five of the schools were IB curriculum schools and the other seven comprised UK National Curriculum, South African and Nigerian schools. The study found that 83.5% of the total students surveyed attained a high total self-regulated learning score. Examining the data and the published curricula backgrounds of the schools demonstrated that, although the IB's PYP does motivate students to become more self-regulated, other curricula schools also promote student self-regulation.

The emphasis of the study shifted to the importance of the individual teacher in the development of self-regulated students. Teacher training is seen as of paramount importance in producing autonomy supportive teachers who encourage self-regulated learners. The data suggested a modification to Boerkaert's model of self-regulation and a revision is proposed to include an emergent level of self-regulation provision for younger students. Aspects of the curriculum are also raised in the conclusion as to the components of a curriculum that supports the importance of student autonomy.

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Chapter 1

Background, rationale and context for the study

"Tell me and I forget. Show me and I remember.
Involve me and I understand."

(Xun-zi: Translation from Homer Dubs' The Works of Hsüntze 1927, 1966, p.113)

1.1 Background

This thesis is about student learning at the end of the primary phase of education and it focuses on ten and eleven year old students. Having worked with a number of different curricula in schools in different countries, my interest is whether the International Baccalaureate's (IB) Primary Years Programme (PYP) supports students more than other curricula in becoming autonomous, self-regulated learners. The IB promotes the notion of lifelong learning and there are aspects of the PYP that scaffold and encourage the students to be more self-regulated.

Boerkaerts (1999) defines self-regulation as a "complex construct" which,

> "…refers to a series of reciprocally related cognitive and affective processes that operate together on different components of the information processing system."
>
> (Boerkaerts 1999, p.447)

It is Boerkaert's model, which piqued my interest in this area of research initially, through the amalgamation of three different areas: learning styles, metacognition and goal-directed theories of the self. Boerkaert (1999) also stresses the powerful importance of the learning environment. The primary phase of learning is an interesting area with regard to self-regulated learning as much of the research has targeted older and adult learners rather than younger students.

I had a very traditional primary school experience in the mid 1960s and my students today often laugh when I recount how I had to learn to write with a pen dipped into an inkwell. In starting to think about the area for this thesis I reflected on my development as an educator over the last thirty years. Looking back I realise now that my interest in self-regulation stemmed from my university days and one particular lecturer who taught me sculpture. His approach was different to the other lecturers who favoured the front of the lecture hall, being, as stated by King (1993) the "sage on the stage". Tom, my sculpture lecturer, was more of King's "guide on the side". It now strikes me how this way of learning collaboratively affected my approach to my students when I started teaching. Tom was supportive of my development but never led it, suggesting strategies and methods to try, teaching the skills required but he was not prescriptive. I remember that I had made a clay model and wanted to cast it. Tom suggested a special vinyl moulding material and then he said those words, which I have reflected on many times. He said that he did not know how to do it but that we would learn together. Now I think that idea of learning together is where my conviction regarding teaching stance originated.

I strongly believe that the development of autonomy in the learner relates to the

environment in which they are learning and that the teacher is in the role of a facilitator, giving feedback and suggestions, scaffolding learning and guiding on the side. It is also that admittance of not knowing something that puts us all, students and teachers alike in the position of a learner. As a goal of the IB is to promote lifelong learning, teachers as well as students, are encouraged to pursue their interests and to develop their inquiries through school and university and beyond. As the quote states at the opening of this section, I also believe that it is in the involvement that we learn more, as teachers and as students. The hands-on approach to inquiry learning is a core belief within the IB programmes too.

Early on in my teaching career the Head of Department appraised me in a Science lesson. I remember his statement that I was not always easy to find in the lab as I was always working with groups of students and not at the front of the class. I do feel that my teacher role is to facilitate the individual's development and to support each student in the understanding of whatever we are learning. I always put myself in the "guide on the side" role. When teaching some primary school students in Asia, I found they experienced difficulty with more open-ended self-directed tasks. These students wanted the "sage on the stage" to instruct them exactly as to what was required rather than developing their own original ideas. One Thai boy, when set a task that required him to create an original design, appealed to me to tell him what I required and he would do it. There is a real paradigm shift from the idea of learning as imparting knowledge to the concept of autonomous self-regulated learning.

I believe that the pedagogical background of the teacher, the philosophy underpinning the school's curriculum and the whole notion of how students learn is pivotal to the concept of autonomy of the learner.

I have been very fortunate in my teaching career to experience a variety of schools employing different curriculum models. I trained in the UK and left England to work abroad just after the National Curriculum was introduced. I taught first in Thailand in a school that used the International Schools Curriculum Project materials. These became the basis for the International Baccalaureate's (IB) Primary Years Programme. I was part of a team of teachers who introduced the IB's Middle Years programme to the school. After Thailand I worked in eight different countries in a variety of international schools, including four IB World Schools. So I have worked with a wide range of different curricula and have had the privilege of working with a wonderful range of teachers from around the world. I have come to focus on the IB approach to learning, as I believe that it is the most effective way to support young students and to start them on their way to becoming independent, self-motivated learners.

The aim of the IB's programmes is:

> "For students aged 3 to 19 to help develop the intellectual, personal, emotional and social skills to live, learn and work in a rapidly globalizing world." (ibo.org)

When I started working in international schools I became slowly aware of the need for a globally portable curriculum to serve those parents now moving around the world with their families. In Thailand parents who were out in Bangkok for a two-year contract tended to favour the National curriculum schools. In Bangkok there were British, American and French curriculum schools for example. For parents planning on returning to their home country these were therefore a more obvious choice. Then came the slow realisation that in an international school when there is

a wide range of students of different nationalities, a different curriculum is required, something that will develop more internationally minded citizens, a curriculum that is planned with the notion that students that across the world share a common goal, the IB Mission.

> "The International Baccalaureate aims to develop inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and respect. To this end the organisation works with schools, governments and international organisations to develop challenging programmes of international education and rigorous assessment. These programmes encourage students across the world to become active, compassionate and lifelong learners who understand that other people, with their differences, can also be right." (ibo.org Homepage)

The IB's Learner Profile is the IB's Mission statement above embodied in a set of learning outcomes for the 21st century. These values combine to create the vision of what the IB terms "international-mindedness". The notion of lifelong learning is espoused by the IB as a vital component in the education of the whole person: intellectually, personally, emotionally and socially. As the mission statement states the aim is to create globally aware and active citizens for the future. The Learner Profile provides all stakeholders with a common language to discuss the progress of students, the curriculum and the general ethos of the school. IB learners strive to be knowledgeable and open-minded inquirers, principled and caring thinkers and communicators, as well as balanced and reflective risk takers.

The notion of students taking responsibility for their own learning is embedded within the practices of an IB school. From the early years students learn these attributes and discuss them through their learning. The participation and action element of the programme ensures student engagement. At a simple level a student

who is interested in his or her current unit of study may choose to bring an item from home that connects to the subject. This engagement could be more proactive and involve taking action to raise money or give service to the community. Self-regulation and autonomy are developed throughout the programmes, involving students in giving presentations to their peers or other students, parents or the community. Students lead their own parent conferences articulating their learning progress and celebrating their achievements with their parents. Students use self and peer assessment to evaluate their learning. They also work together as a class or group to create rubrics for their assessments. Students contribute constantly to their own learning and the units studied grow collaboratively with student and teacher input. An overview of the PYP for reference is included in Appendix H.

My interest in this area of research grew from my experience of teaching primary age students in schools with different curricula around the world. In my first year at Durham, the Psychology of the Learner unit inspired me to delve further into the concept of student motivation. Working most recently within the International Baccalaureate (IB) programme, which champions the individual's motivation, independence and personal responsibility for their learning, fuelled my passion for the area of autonomy. As a teacher, developing engaging learning experiences for the students I have taught has always been of importance to me. I also believe that if we teach the skills required for learning we support our students in becoming more independent learners. I started to wonder if the IB's Primary Years Programme (PYP) really did encourage students to become more self-regulated, autonomous learners.

In deciding to explore the self-regulatory development of students at the end of their Primary years I wanted to examine different schools to compare the students in different curricula settings. I am aware that there are many variables that could affect the results of this study. In the planning of the study, I have considered the teacher's implicit values and beliefs in relation to their stance with regard to student autonomy, gender and time in the school. Once the results are analysed there may be further factors that need to be taken into consideration.

This research is intended to explore the relationships between the students' perceptions of their own self-regulatory behaviour, the teacher's stance within the continuum of teaching style and the curriculum context of the school. I would argue that self-regulated, autonomous learning is a vital goal for education and as such is an important area for research.

1.2 Objectives and significance of the research

In this research the theories behind self-regulated learning will be examined, particularly motivation theories relating to self-determination and meta-cognitive theory. In an introduction to a special issue of the Educational Psychology Review in 2008 Alexander begins by discussing the interrelationships between metacognition, self-regulation and self-regulated learning. These areas of research have undergone a resurgence of interest in recent years. Self-regulatory, autonomous learning as a concept stems from motivational theories of learning (Skinner and Belmont 1993,

Schunk and Zimmerman 1997, Schunk 1999). Learning styles, metacognition and theories relating to the self are also influential in autonomous learning. Boerkaert's (1999) model of self-regulatory behaviour is particularly referenced as central to the research area because the model charts the student's development of self-regulatory practices as well as referencing the importance of the learning environment. This model is outlined more fully in the next chapter (2.2 p.31) and returned to and an adaptation suggested in the conclusion. (7.1 p.178)

The environment for learning, the curriculum and the role of the teacher are viewed as vital components of this research, as all impact upon the student's learning and motivation (McComb and Marzano 1990,Paris and Winograd 1990, Pintrich and De Groot 1990, Paris and Paris 2001,). In terms of metacognitive ability in younger students, research has shown that primary aged students are capable of developing the metacognitive practices necessary to develop self-regulatory behaviour (Perry 1998). Self-regulated students are autonomous learners who are proactive in pursuing their own goals and who take control of their learning.

The issue of students becoming self-regulated, independent learners is a significant one to focus on as educators. Our ultimate goal as teachers is to educate our students to become self-regulated, motivated, autonomous learners with a life-long passion for learning. We need to know if this independence is visible when the students are at the end of the primary phase of education, and if a particular type of teacher is required to enable this development of self- regulated learning. Different schools' curricula can also be examined to discover how far the various programmes embed self-regulatory learning practices within their documentation. The end of the primary sector of education is a good time to assess the development of self-

regulatory behaviour, as it is hoped that the learning opportunities provided in the primary years have produced students who can take responsibility for their own education and who have developed strategies and learning behaviours to support this as they move into the next phase of their education.

This research will potentially inform teachers as to the effectiveness of their programmes as well as allowing curricula and pedagogical comparisons.

1.3 Research questions

- Does the International Baccalaureate's Primary Years Programme facilitate self-regulated learning in students?

- Does the International Baccalaureate's Primary Years Programme facilitate students' self-regulatory learning more than other curricula models?

- What is the relationship between teachers' approach to student autonomy and the students' autonomy?

- To what extent do different curricula embed the promotion of self-regulated learning and autonomy within them?

In order to address the research questions it was necessary to select an appropriate research method. The research approach chosen is a mixed methods approach

combining quantitative and qualitative techniques. This involved data collection from two questionnaires in a number of different schools as well as descriptive analyses of curricula and discussion of two open-ended sentences from the questionnaire given to students. These methods were selected in order to enable a comparison between the students' responses and their teacher's motivational teaching style. The various curricula documentation for the different schools were also examined to ascertain to what extent autonomy is embedded within the schools' pedagogical approaches. A series of interviews with ten and eleven year olds from one of the IB schools in the study complement the analyses of the quantitative and qualitative data from the questionnaires.

1.4 Overview of the Thesis

Chapter One provided the rationale for this study and the personal context for the selection of this research area. Boerkaert's (1999) model of self-regulation was referenced as central to this study as it provides a framework for the research and informs the data analysis and the conclusions. The research questions and methodology were briefly introduced.

Chapter Two reviews the research in the area of self-regulation. The chapter defines self-regulation and the metacognitive processes in student autonomy are outlined. Boerkaert's (1999) developmental model is introduced and her stages of self-regulated learning are detailed. A description of other models of self-regulated learning by Zimmermann (2002) and Grow (1991) are included as part of charting

the development of research in this area. The chapter then moves to consideration of the role of the teacher in developing self-regulated learners as well as the importance of the environment. Subject discipline in relation to autonomous learners is also explored in this chapter.

Chapter Three outlines the mixed methods approach adopted in this study. This approach was selected to support the articulation of the complexity of the self-regulated learning construct. The participants and their geographical orientation and curriculum are detailed. The two questionnaires (student and teacher) and the interviews are outlined. The procedure for the pilot and main study are charted. With regard to the analysis framework for the research data, the self-regulated learning scores from the student questionnaire was the main quantitative measure. The qualitative results from the sentence starters on the student questionnaire particularly "learning is…" were recorded and displayed as Tag Crowd word clouds as well as thematically analysed.

Chapter Four provides an overview of the quantitative data collected in the study. The quantitative data from the student and teacher questionnaire is the focus of this chapter.

Chapter Five presents the qualitative data from the student questionnaire sentence starters and the student interviews. For contextual purposes the curriculum background of each school is also outlined at the beginning of the chapter.

Chapter Six relates the data to the four research questions. The chapter examines whether the IB's PYP programme facilitates self-regulated learners more than other curriculum models. The relationship between teachers' autonomy and student autonomy is discussed along with the relation to the schools' curricula as well as the results from the study. The extent to which self- regulated learning is embedded within the individual schools' curricula is charted and the challenge of discovering aspects of the hidden curriculum details and the complexity of individual school environments is highlighted.

Chapter Seven provides the first of two concluding chapters where Boerkaert's model of self- regulated learning is utilised as a framework for the discussion of the findings from the study. An adapted model for younger learners is suggested, incorporating a new Emergent Self-Regulated Learning centre. This new model is detailed with relation to the role of the teacher in the development of self-regulated learning. The shifting focus of the research is demonstrated through discussion of the complexity of the influences on the students and the various factors that support autonomous learning. These are represented in a two-dimensional form. Further discussion of the research questions with relation to the key issues of curriculum, pedagogy and teacher effect are outlined with regard to the development of self-regulated learning.

Chapter Eight is the second concluding chapter which considers the emerging theme of the importance of the teacher in the development of self- regulated learners and consideration towards teacher education including the key skills and competencies

in the curriculum which support self- regulation. The details of a three- dimensional model of the self- regulated learner are described and the thesis ends with a short personal reflection.

1.5 Summary

In this first chapter the personal development of my interest in the area of self-regulation and the autonomy of the learner and its relevance as an area for research were explained. The International Baccalaureate's Primary Years programme was introduced. The focus of the research on students at the end of the primary years is clarified as an ideal time to ascertain the start of self-regulated learning.
The relevance of the relationship between the teacher's stance towards autonomy and the students' autonomy as well as the curriculum background of the school with regard to the research was outlined. Boerkaert's model of self-regulated learning was referenced and the research questions were stated and a plan for the research provided.

The chapter concluded with an overview of the whole thesis with the focus of each chapter summarised. The next chapter reviews the literature regarding self-regulated learning and includes the pedagogy that supports autonomous learning as well as the role of the teacher and the learning environment.

Chapter 2

Literature review

> "Self-regulated learning is - an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behaviour, guided and constrained by their goals and the contextual features in the environment."
>
> (Pintrich 2000, p.453).

Introduction

In the previous chapter the background, context and rationale for the study was introduced. The Pintrich (2000) quote above locates the goal-directed, self-regulatory process at the student level in the environmental context, yet the teachers' role in the development of self-regulatory practices is omitted from this definition. In this literature review Boerkaert's "complex construct" of self-regulated learning is deconstructed and comprehensively defined and its development charted with reference to the role of the teacher and pedagogical approaches, which it is argued can support autonomous learning.

Boerkaert's (1999) model of self-regulated learning, as well as Zimmermann's (2002) three phases (Forethought, Performance and Self- Reflection) is explored. Boerkaert's model in particular is outlined in detail, as it is a central part of the framework for the data analysis of the study as well as a lens through which to view the research. The role of the teacher in developing and supporting the independent learner as well as the significance of the learning environment are also examined in this chapter.

2.1 What is self-regulated learning?

> "Self regulated learning reveals planfulness, control and reflection; it indicates competence and independence, which are virtues that are prized on the developmental path to maturity."
>
> (Paris and Newman 1990 p.87)

Autonomous or self-regulated learning has grown in importance as a new idea in education. Paris and Newman's (1990) "path to maturity" quote emphasises the metacognitive strategies that support lifelong learning. The quote also highlights an important consideration with regard to the nature of self-regulated, autonomous learning, this path is "developmental", and it is not age related. Students plan independently and reflect upon their actions. Individual students "learn to learn" as they develop strategies and tactics whilst continuing to discover their own strengths and challenges with the support of teachers and parents. Schunk and Zimmerman (1997) directly linked motivation to the concept of self-regulation. Self-regulated students are intrinsically motivated, autonomous learners who are proactive in pursuing their own goals and who take control of the process of their learning. Self-regulation is a self-directed process according to Zimmerman (2002). Students who are self-regulated set their own goals, possess superior motivation and utilise adaptive learning methods. Zimmerman believes these students are more likely to succeed academically, as well as being more optimistic about their future. An autonomous learner who has developed a series of strategies that they have found successful will be optimistic and forward looking, as they will feel more in control. Winne (1997) sees young learners as self regulated when they are able to adapt their approaches to learning. Self-regulation is a skill that can be taught and learnt

through "goal directed engagement". Students who are taught and encouraged to evaluate their work and to set learning goals will develop individual strategies which prove to be successful in furthering their learning. Hattie (2012) sees self-regulation or metacognitive skills as one of the ultimate goals of all learning and a vital component of lifelong learning.

Paris and Paris (2001) describe the increasing interest in self-regulated learning and view self-regulation as a construct that includes metacognitive and cognitive strategies, motivation, task engagement and classroom support. They consider self-regulated learning as a skill that can be developed in the classroom.

> "Self-regulated learning, as the three words imply, emphasises autonomy and control by the individual who monitors, directs and regulates actions towards goals of information acquisition, expanding expertise and self-improvement."
> (Paris and Paris 2001, p.89)

The responsibility for the learning rests with the student who "monitors, directs and regulates" their work towards their own set goals.

There is a distinction to be made between being an independent learner and being an autonomous learner particularly with regard to primary age students. Being taught self-regulatory practices leads young students to develop their independence in learning towards the ultimate goal of autonomy. In this thesis the notion of independent learning refers to the students working without direct teacher support. A self-regulatory autonomous student will have well developed reflective skills and will know for example, when to ask for help, as this is an element of being reflective with regard to their learning. The Paris and Paris (2001) quote above does not

mention motivation and how younger students will require an autonomy supportive teacher and a stimulating classroom environment to facilitate the development of self-regulation. Educational movements which embody the central tenets of self-regulated learning include "learning to learn",' "reflective teaching and learning," "autonomous learning" and "flow experiences".

Azevedo (2008) argues that learning utilises numerous self-regulatory processes. He talks of planning knowledge activation, metacognitive monitoring, regulation and reflection. In the IB's Primary Years Programme (PYP), the teachers often start their units by planning a provocation for the students to kick-start the new learning, to activate their prior knowledge and to stimulate student questioning. The notion of knowledge activation relates to the individual's motivation as well as tapping into previous understanding. As previously mentioned reflection is one of the IB's Learner Profile attributes and is also a vital and planned for component of any Unit of Inquiry. Reflective practices are an essential element of developing self-regulation. In the IB's PYP programme reflection is a part of each unit taught. The younger primary students often struggle with developing effective reflection on their work, finding it a challenge to consider their learning after completing their summative assessment. It requires a great deal of practice, encouragement and scaffolding of the process of reflection by the teacher to have the students complete purposeful individual reflections on their completed tasks. Question prompts and sentence starters support the young learner to consider their performance and development. There are a number of skills to be learnt and practised for the student to become autonomous in their learning. Hattie (2012) uses the terms metacognitive skills and self-regulation interchangeably and sees these as related to one of the

ultimate goals of learning, that of lifelong learning. He also cites the wish of all teachers for their students to become their own teachers, effectively to become autonomous learners.

The link between self-regulated learning and metacognition is strong. Flavell (1979) explored this connection, viewing metacognitive strategies as being closely linked to self-control and self-instruction. He felt that teaching children various cognitive strategies would help them to improve their own learning. In primary aged students it is vital that the strategies for self-regulation are explicitly taught and practised. Efklides (2006) focuses on metacognitive experiences, which have implications for learning. The feelings of knowing, confidence and satisfaction for example are seen as distinct from metacognitive knowledge or skills, and are often central to the successfulness of the task in hand. These metacognitive experiences explored by Efklides could be positive feelings of familiarity with a given task or negative feelings, as when a student experiences difficulties. Feelings of confidence would benefit a students' self-regulatory development when combined with appropriate feedback and monitoring by the teacher. The notion of feelings attached to autonomous learning is linked to the concept of self-motivation. Boerkaerts and Cascallar (2006) see self-regulation as consisting of multiple processes and components. The strategies could be cognitive or metacognitive and there would also be elements of intrinsic motivation and task engagement involved.

Lessons to be learnt for teachers from these theories would lead them to develop programmes that support learners by encouraging more self-regulatory behaviour, building time for self reflection and personal goal setting as well as challenging their students with stimulating tasks. The confidence of these students would have to be

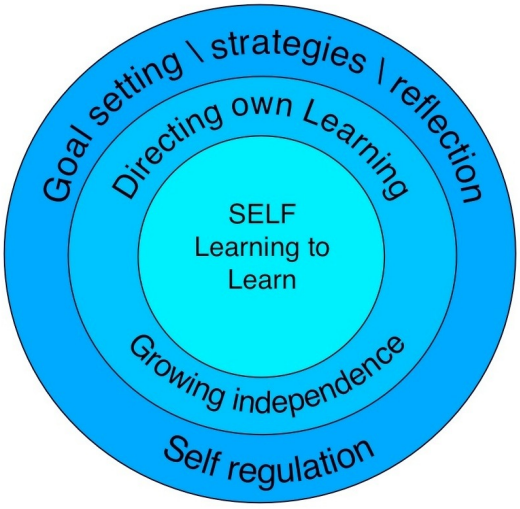
high to enable them to work successfully towards their goals with little extrinsic motivation. As teachers we aim to inspire our students to want to come to school each day excited and self-motivated to learn more.

The next section charts the development of self-regulated learning.

2.2 How does self-regulated learning develop?

Boekaerts (1999) cites three schools of thought that have influenced the development of self-regulation. Learning needs, research into meta-cognition and theories of the self are all related to autonomous learning. Autonomous learning is seen as the key to successful learning in school and beyond. Self-regulation involves the development of knowledge, skills and attitudes that can be applied across different contexts. Boekaerts sees this construct as inherently complex and related to the three areas of research mentioned previously. Her model consists of three circles.

Figure 2.1 A representation of Boerkaert's model of self-regulation



The centre of the model is concerned with the regulation of processing modes. This relates to the learner understanding how they learn, their learning styles and how they process information. This reflective dimension of self-regulated learning is explored in the current study to determine whether different approaches to curricula are associated with different levels of reflection. In relation to the students, knowing themselves in relation to their learning and which strategies work best for them will aid their autonomous learning ability. The role of the teacher is not obvious in this model, but with the focus of the research being on primary age students, the teacher's role in facilitating and supporting self-regulated learning practice is paramount. Even before this stage of learning how to learn, explicit teaching would scaffold the development of self- regulation in younger students. The notion of learning how to learn is key in self-regulation. The responsibility for learning shifts to the learner and the role of the teacher is more supportive becoming less of the traditional "sage on the stage." This charts the movement of learning for the student as not being as concerned with the learning of facts as much about learning the skills required to learn for themselves. The proverb, "give a man a fish and you feed him for a day; teach a man to fish and you feed him for a lifetime," is relevant here. Learning to learn is essential in the development of a self-regulated, autonomous student. A teacher could tell students all of the relevant facts in order to take a test, but the students would not know where to apply the information for themselves. Teaching the skill of researching, developing critical and creative thinking, communication skills, and social and self-management abilities is key for students today.

The middle layer is the regulation of the learning process. This is the ability of the students to direct their own learning. It will be interesting to see which curricula models incorporate the students' own questions or give time or encouragement for more independent study. This ability will vary for different areas of the curriculum and the age of the child. Vygotsky (1986) believed that metacognition is not realised in children until adolescence. However, Perry's later research (1998) examined young children's self-regulatory practices when writing. She found that young students are indeed capable of managing their own learning. Perry reported that the seven and eight year olds in her study displayed an awareness of their own thinking processes and were able to stay focused on the task in hand. The developmental path of maturity mentioned at the opening to this section starts earlier than previously thought.

The outside layer of the model is concerned with the regulation of the self and goal setting. Boekaerts specifically references personally chosen goals. Self-regulated learners should be able to select and be committed to goals for their learning and this is explored with the students in this study for this reason. This practice would need careful scaffolding and instruction as effective goal setting is a skill, which would need to be developed by the students. This layer also includes strategies and reflection as truly self-regulated learners will have developed their own strategies for learning independently and will naturally reflect on the process of learning. Self-regulated learning embraces these three areas and links all of the three circles in the model. Unlike some models there is not a sense of development through the layers, more a sense that a truly autonomous learner will have developed all three areas.

An interesting point is made by Boekaerts with regard to the relationship between the learning environment and self-regulated learning, that it is in fact a bidirectional relationship. A powerful and challenging learning environment promotes the application of self-regulatory skills. The skills that an autonomous learner acquires allow them to access fully the learning experiences the environment provides. Although not explicitly mentioned in Boerkaert's model the teacher's role in this context is as a facilitator, to provide feedback and to aid the student's reflective processing and analytical skills as well as to scaffold the learning where appropriate. In fact it is the teacher that holds the key to the development of autonomous learning through their pivotal place in facilitating their students' motivation. Thus the current study not only explores students' self-regulated capabilities but also investigates teachers' stance on autonomous learning and how autonomy supportive or controlling they are in their approaches. For teachers new to the IB curriculum this movement away from control is one of the most challenging aspects of the Primary Years' Programme. The PYP curriculum emphasises the students' contribution to the units taught through the acknowledgement and development of student questions, which are then incorporated into the unit plan. The teacher is not required to have the whole unit mapped out before engaging the students in the topic and receiving their thoughts and ideas. Therefore in the PYP the units taught are more organic in development. The teacher plans the unit and decides on the central idea, the concepts to be taught and the skills focus required for the student to complete a summative assessment at the end of the unit, which will show the individual student's understanding of that central idea. But a student's question could alter the direction that the unit takes and individual students are able to focus

on different areas of the topic of interest to them.

With regard to the part that the environment plays in the development of self-regulated learners, Butler (2002) charts the progress of the concept of self-regulation as moving from the self to the "self in context". The earlier studies looked more at an individual's processes and now research is focusing on the social process, seeing the growth of the autonomous learner as related to both the individual's predilection to self regulation and the learner's environment as pivotal factors. Boekaerts and Cascaller (2006) explored the social context of learning further by looking at the social origins of student actions. Cues in the environment were stressed as well as the importance of student goal setting. The culture of the school, its leadership, ethos and community has an effect on the teachers and the students and their learning experience.

Other work by Boekaerts and Corno (2005) involved a top down and bottom up model of self-regulation. Self-regulated learning is seen as having two distinct sides. One is the teaching of strategies to support the learner, a top down approach. The other is the development of the autonomy of the student as the individual becomes more self-regulatory in their learning and constructs his or her own strategies, a more bottom up process. Autonomy is the goal in education, the ability to guide one's own learning is shaped by the learning experiences the student receives and as teachers we hope all students become autonomous learners eventually. These two views of self-regulated learning are both useful as they are focused on the processes of learning, the development of the individual child as well as the variety of

instruction. Regardless of the view one takes, students do become more self-regulatory with age, experience, opportunity and motivation. A teacher may have to take a more top down approach initially as the student is in the process of developing their autonomous behaviour. A teacher would explicitly teach those skills required by the student to develop independent self-regulation, supporting students with planning a task or project through scaffolding research, assisting with time management of the task and helping the student to become more self-regulated in their learning. As the student gains the confidence to work more independently and develops the awareness of their learning process, then the teacher's role changes to be more "bottom up", supporting the individual's work and encouraging them in their autonomy.

McCombs and Marzano (2010) develop the exploration of "will" and "skill" integration by examining the metacognitive understanding required to develop students' will to be self-regulated learners and to develop the skills required. Their definition of self-regulation sees the behaviour as primarily initiated by the individual student's "will" to learn and also highlights self-awareness as vital for the students.

> "We define self-regulated learning as the outcome of choosing to engage in self-directed metacognitive, cognitive, affective, and behavioural processes and skills."
>
> (McCombs and Marzano 2010 p.53)

McCombs and Marzano (2010) imply motivation through the notion of the students' "will" to learn. In their statement above there is a choice made and the desire to improve and develop, as a learner, is self-directed. Students who are motivated to learn and who drive their independent learning are self-regulated learners. Focus

here is on the student; it is not clear how younger students develop this "will" to learn how to learn and the role of the teacher in this process.

Zimmermann (2002) explains how metacognition through greater self-awareness can enhance a learner's self control and therefore lead to self-regulation. Students who are cognisant of their strengths and areas for development can develop self-regulatory capacities. This should be improved through encouraging individuals to set goals and to regularly reflect on their learning processes. The IB's PYP includes regular reflection and goal setting for all students. In this we are seeking students to be more proactive in their learning. Students can set goals for themselves to improve on skills that they need to develop further. Students need to be reflective with regard to their learning and will need support in this area as they develop further towards becoming autonomous. Zimmermann (2002) sees self-regulation as vital to the development of lifelong learning skills. The intrinsic motivation implied in regulating one's own learning should be sustainable independently of teacher intervention. Effective teachers should aim to make their interventions unnecessary as students become more autonomous. Zimmermann sees learners as requiring goal setting, effective strategy use, self-monitoring of performance, time management, self-evaluation and reflection. The self-regulated learner should also be capable of restructuring and adapting the physical environment so that it allows the goals set to be achieved (Schunk 1999). The autonomous student is flexible and acknowledges that the process of learning involves change. Zimmermann (2002) charts the three phases a self-regulated learner moves through. Prior to the learning task the student is in a phase termed Forethought, which is the goal setting and planning stage when

the student's intrinsic self-motivation is crucial. The central phase is the Performance when the student is completing the required task and they are able to consider and monitor their own performance. The phase after the Performance is Self-reflection, an evaluatory phase when the learner looks back and assesses the work completed. The three phases are cyclical and the self-regulated learner would move round them through their work, for a multi-level project the student might go through the cycle more than once. The processes involved in these phases are teachable, and they are areas for learning which we need to support, scaffold and utilise in the school environment and beyond. Boerkaert's and Zimmermann's models are developmental and not age-related and even adult lifelong learners may not be completely autonomous learners. A developmental model is connected more to stages of development along a continuum and not referenced to the age of the student. This is in line with Margaret Donaldson's critique of Piaget's fixed age stages (1979). The age of a student is often used as a guide to what children may accomplish but self-regulated, autonomous learning is developmental in nature.

The staged self-directed learning model proposed by Grow (1991) demonstrates,

> "A way teachers can be vigorously influential while empowering students towards greater autonomy."
>
> (Grow 1991 p.128)

In Grow's model the student moves from dependent through interested and involved to self-directed. The teacher changes stance from authority coach, through acting as a motivator and guide being "vigorously influential" and facilitating the learning to being a consultant and a delegator. Examples are given for each

developmental stage. There are factors that determine the level of readiness for self-directed learning. These include openness to learning opportunities, the student's own self-concept as to effectiveness as a learner, independence as a learner, the acceptance of responsibility as a learner, love of learning, creativity, a positive outlook and the ability to use basic study skills and to be able to solve problems. Grow (1991) was working in adult education but his model is relevant to learners generally. He derived it from the context of situational leadership. Grow sees the teacher's purpose as matching the learner's level of self-direction and aiding them in their progression to autonomy. Unlike Boerkaert's model the teacher's stance in developing the students' self-regulatory practices is explicitly included. Grow discusses the idea of mismatch between the learner's level and the teacher stance. It would be frustrating for an independent learner to have a more controlling teacher or, conversely, for a learner who needs support and scaffolding to have a teacher who demands autonomy. The individual learner varies in their needs and developmental stage and therefore a "good" teacher can identify the student's level and match their approach to the student. Differentiation often is seen as relating to the level of the work provided but it also relates the knowing the amount of support individual students require. The notion of a teaching period moving through the levels is appealing. For example, supporting the students first, then initiating group discussion which leads to student choice of a project, then the students working independently on those projects.

Paris and Paris (2001) chart the development of the teaching of learning strategies to support self-regulated learning. This development is seen as beginning with

metacognition. Students are taught how strategies work as well as when and where the particular strategy should be utilised. Then fun elements involving group or individual challenges are introduced into the learning process to engage the students' learning. The next development focused on the fact that various disciplines warrant different strategies and more school-based research was undertaken into self-regulated learning through subject areas. The focus was further expanded to encompass collaborative learning. Here group discussions of effective strategies and how to use them were viewed as central to developing the students' learning and to enable them to learn more effectively. In this way self-regulated learning focuses more on the development of skills than the acquisition of knowledge.

Winne (1997) believes that self-regulated learning is built into learning engagements that are goal directed. He sees students who have already developed some self-regulating tactics in their learning that new forms can be "bootstrapped" onto existing practices. Winne (1997), in seeing self-regulated learning as more plastic, does not dismiss the learning context, acknowledging its effect and describing it as a "personally-evolving paradigm about learning" (p.408). He sees the individual student's experiences varying because of different teachers, parents' attitudes and support, resources provided and past assignments undertaken. The development of a self-regulated learner is individual as all students develop in different ways because of their background and experience.

Zimmerman (Schunk and Zimmerman 1997) produced a social cognitive model of how self-regulatory ability grows. Academic ability and confidence is seen as

developing from social sources and shifts to self-regulatory behaviour in a series of levels. The first two levels involve the learner in watching and copying behaviour in the learning environment. The next level shifts the emphasis to the self, as the learner tries to work on the task alone. In the final level where the learner has developed autonomy they are regulating their own learning, maybe even teaching their peers and helping other students with completing the given tasks. Practice at the lower levels does require feedback for the students to be able to internalise their understanding and to develop the behaviour required. At the higher levels social sources are still required, students need an audience for their work and benefit from challenging constructive criticism to develop further as learners. Schunk (1999) explains that self- regulation does not mean social independence. Autonomous learners use the social environment to obtain feedback and to develop understanding.

> "As learners internalise skills and strategies they adapt them in unique ways. Learners increasingly structure their social environments to make them more conducive to skill improvement."
>
> (Schunk 1999)

Here Schunk highlights for us the adaptive nature of learning. Students may seek a quiet area to study as they have learnt that this is the optimum environment for their learning. Students have often developed a unique and personal way to make notes that works for them. As the IB philosophy emphasises, we are all life-long learners continually acquiring new information and new behaviour; part of this can be environmental change. The next section looks at the stance of the teacher in regard to self-regulated learning as well as the effect of the learning environment.

2.3 What is the importance of the teacher's stance towards autonomy and what part does the environment play in self-regulated learning?

Larkin (2009) believes that "judgements of learning" are what self-regulated learning is concerned with. She sees self-regulated learning as the over-arching theory and metacognition as a part of this theory. In examining metacognition in young children Larkin (2009) also acknowledges the vital part that the teacher plays in providing the right environment for metacognitive development and self-regulatory, autonomous learning.

> " Crucial to this development was the role of the teacher in facilitating this self regulation through creating a supportive environment, being flexible enough to alter the tasks to meet their students' developmental stage and create the best challenge and providing clear instructions and modeling behaviour."
> (Larkin 2009. p.42)

Teaching in order to develop individuals as autonomous learners involves teachers in a shift from teaching the material to teaching the learner how to learn. Developing the optimum learning environment that supports the learner as well as differentiating tasks for individual students, yet providing a challenge for each student tailored to their needs. Strategies of modeling practices and maintaining constant assessment and adaptive strategies for the individual student's needs are crucial to the development of reflective, self-regulatory learners. Teacher education is necessary to support teachers new to this pedagogy. Different curricula in schools vary as to the focus on the development of self- regulation and lifelong learning as a goal for their students and as an element in the professional development of their staff.

Flink, Boggiano and Barrett (1990) examined the difference in learning in classes

where the teacher took a controlling stance as opposed to other classes where the teacher supported learning. In the classes with a controlling teacher the students were given no choice or any opportunity to utilise their creativity. It was found that intrinsic motivation and the level of performance then decreased. In this research, the same questionnaire used in this study, the Problems in School questionnaire from Deci et al (1981) was used to ascertain the stance taken by the teachers, as to whether they were controlling or autonomy supportive within the classroom environment. Flink, Boggiano and Barrett (1990) found that the perception of controlling teachers was more positive to those outside of the educational field. Parents often favour the "firm" teacher, the controlling adult pressurising the students to perform. The study concluded that a taxonomy of teaching behaviours was required to see the effect on learning; this has now been compiled by Hattie (2012).

Some of the main influences on children's learning from Hattie's meta-analysis were teacher- student relationships, how to better teach metacognitive strategies, teaching study skills and teaching learning strategies. This study has implications for effective teaching incorporating self-regulatory practices. In Hattie's (2011) "Visible Learning for Teachers", he talks of teachers instilling in their students a love of learning and Hattie cites passion on the part of the teacher as a contributing factor on the impact the teacher has on their students. Similarly in the IB's PYP where the teacher creates the inquiry units that are taught, ideally passion for what is being taught and the way it is taught is a motivating factor for the teacher as well as the student. The teacher directs the learning and invests time in writing and planning the

unit for their students. The teacher's motivation and interest is high and consequently the way that the unit is taught is different than if the teacher was just handed the material to teach. The students are equally motivated by the passion and interest of the teacher and engage more fully in the unit as they have input and choice in the learning experience. This process is an ideal one; in reality it may not happen if the teachers are not supported in this way of teaching by the school or they are not philosophically inclined towards inquiry teaching.

Deci et al (1991) introduced the concept of self-determination as a theory of intrinsic motivation, which is a facet of self-regulation. In schools the focus is on the teacher's stance as to whether they are controlling or autonomy supportive. Deci et al (1991) discussed the questionnaire they developed and explained how teachers' orientations affect the classroom climate. Autonomy supportive teachers enhance the intrinsic motivation of students and their achievement. The supportive relationship that the student has with the significant adults in their learning environment aids them in developing more autonomous behaviour.

> " When significant adults - most notably, teachers and parents- are involved with students in an autonomy supportive way, students will be more likely to retain their natural curiosity (their intrinsic motivation for learning) and to develop autonomous forms of self-regulation through the process of internalisation and integration."
>
> (Deci et al 1991 p.342)

Parents can see a controlling teacher as being a "good" teacher. This view can relate to the person's own experience of education. As previously mentioned parents often want a teacher who is "firm" with their children. As in IB schools when we have to

take time explaining the philosophy and pedagogy of the programme, providing essential parent education into how students learn is vital to support the students most effectively. Even explaining to parents that giving their child the answer to a homework question is not helping them to understand how to work out another problem would aid students in developing the self-regulatory strategies they require to become an effective learner. The way that an autonomy supportive teacher would behave is different to a controlling teacher. An autonomy supportive teacher supports the individual student's autonomy through the teaching of strategies and skills to develop the students' responsibility for their learning. A controlling teacher sees the relationship they have with their students in terms of power. A controlling teacher tends to lecture more than listen, is more fixed as to curriculum content and would not alter plans to reflect student interests. Autonomy support requires understanding on the part of the teacher, parent and student as to what is crucial in the development of a self-regulated, autonomous learner.

De Jäger, Jansen and Reezigt (2004) explored metacognition in primary school learning environments. They identified the importance of the teacher in developing metacognitive strategies to develop self-regulated learning. There are some students who develop these strategies independently, though others will require extensive teaching and practice. Their discussion of learning environments and the role of the teacher suggests that changes in the methods of teaching would enhance the learning of the students particularly with regard to metacognitive skills and knowledge. The traditional "chalk and talk" methodology is not as effective in developing critical and creative thinkers and self-regulated learners. Autonomy

supportive teachers who nurture a lifelong love of learning in their students through supportive and engaging methods of teaching will enable their students to become more self-regulated.

Skinner and Belmont (1993) looked at the effects of different teacher behaviour, particularly referencing teachers' involvement with their students, the structure provided and how autonomy supportive the teachers were and how this affected student engagement. In the study it was found that teacher's autonomy support and the structure of the learning provided was predictive of student motivation. The importance of the student/teacher relationship was highlighted in their conclusion. Therefore in this study questionnaires were given to both the students and the teachers to gain a fuller perspective on the development of self-regulatory behaviour.

Paris and Paris (2001) focused their research on the classroom application of work on self-regulated learning. They considered strategies for reading and writing, cognitive engagement in tasks and self-assessment. To enable students to become autonomous self-regulated learners teachers can provide information and opportunities to students that will aid them to develop as strategic, motivated and independent individuals. Paris and Paris (2001) also point out the change in teaching styles in the last thirty years. Teachers have moved on from a purely didactic style to being more of a facilitator, where the teacher is highly reflective of their own practice and utilizes scaffolding strategies in their instruction to empower the students' autonomy. The issue is student engagement so that learners are enabled

to engage in thoughtful and strategic ways. Open-ended tasks are excellent for requiring students to make choices, work in collaborative groups, construct personal meanings as well as derive feelings of self-efficacy as a result of their work. In reading and writing, learning different strategies to utilise in their work puts the onus back onto the learner to engage with texts on a personal level.

Another area discussed by Paris and Paris (2001) is project-based learning. This is a specific task based strategy where students work collectively on an investigation and select their own questions. It has a lot in common with the Primary Years Programme (PYP) inquiry based curriculum that the IB offers young students. As previously mentioned, in a Unit of Inquiry PYP students would be involved in directing the path of their unit to a greater or lesser degree by posing questions that would lead their inquiries into the topic. The teacher sets the unit framework selecting the central idea and related aspects from the Learner Profile, concepts, attitudes and skills. They plan initial provocations into the subject area and ascertain the prior knowledge of their students. Then the students make choices as to their particular focus within the unit and the teacher's role is more as a facilitator, supporting skill development, teaching strategies and guiding the students through their inquiries.

Hattie (2009) acknowledges the part that teachers can play in developing motivation and self-regulation in their students. He states that effective teaching is not, "the drilling and trilling to the less than willing"(p.25). Teaching has to be about engaging learners in their learning as well as providing the strategies for self-reflection and monitoring of that learning.

"When students can move from idea to idea and then relate and elaborate on them we have learning- and when they can regulate or monitor the journey then they are teachers of their own learning." (Hattie 2009 p.29)

In this quote Hattie simply charts the development of self-regulated learning as students connect ideas and develop them for themselves and then when they evaluate their own work process then they are self-regulating. This may involve self-evaluation of summative assessments upon completion of a Unit of Inquiry, more formative skill assessments throughout the unit, goal setting at periods throughout the year as well as student led conferences. All of these practices are part of the framework of the IB's PYP programme. If we want students to be "teachers of their own learning", truly self-regulated learners, then the taught and assessed curriculum in the school has to reflect this in its philosophy, pedagogy and practice.

Fredriksen et al (1997) described the criteria of a successful learning environment as involving a good classroom climate, seeing the social environment of the classroom as empowering learning through engagement, encouragement, rapport, respect and sensitivity to diversity. These criteria are seen as characterising expert teaching. Engle and Conant (2002) discuss the optimum learning environments that support student autonomy, terming these environments "Communities of Learners" classrooms. They suggest that there are four principles involved: engagement with problem solving, responsibility for learning, accountability and access to resources. Engle and Conant (2002) particularly mention disciplinary engagement as important. Students need to learn the specific skills and knowledge pertaining to a specific subject area. In terms of responsibility there is the idea that the students

relationship with their learning changes.

> "The learning community generally encourages students to be authors and producers of knowledge, with ownership over it, rather than mere consumers of it."
>
> (Engle and Conant 2002, p.404)

This really charts the shift in focus for teachers too, moving from a more controlling role to a more autonomy supportive role. In the Units of Inquiry in the IB's Primary Years Programme (PYP) teachers facilitate the students' learning and the students' questions guide the development of the unit. The notion of ownership is bound up with student motivation and engagement. This type of learning requires a particular type of teacher, one who can relinquish control of the learning and empower students to take responsibility for their own learning. This is not always easy, for example, a teacher in one of the IB schools in the study described a unit where he was unsure of the direction that the study of conflict should go next. With a great deal of trepidation he handed over control to the ten and eleven year old students in his class, who stepped up to the challenge and directed the course of the learning, asking a variety of questions and suggesting various avenues for research. After this experience, this teacher has developed a much more autonomy supportive stance towards his teaching. The model for the development of self-regulated learners needs to include the role of the teacher. The idea of a community of learners is important in that the school background, ethos, leadership and staff collaboration all impact upon the student's learning. A supportive environment where self-regulation and autonomous learning is valued and developed is key to successful education towards lifelong learning.

2.4 What are the implications for practice of developing self-regulated learners with regard to subject disciplines?

With regard to disciplinary learning, Newton and Newton (2010) explored engagement in Science lessons. Their study examined the pedagogy of primary school teachers with regard to engaging students in science learning. They were working with new teachers and found that these teachers believed that hands-on active participation in science was most important. This simplistic idea does not take into consideration the individual's preferred learning approach. Teachers have to differentiate their instruction for their students' varying learning preferences and abilities. Newton and Newton (2010) also state that the teacher also is required to find ways of teaching the less practically approached aspects of science in an engaging way. The challenge for teachers in the PYP is to capture and maintain their students' interest and motivation in their learning. Hands-on learning experiences are often utilised as being favoured for their instant appeal to learners. However, as Newton and Newton (2010) mention, the hands-on activity so popular in primary science does not always develop the scientific understandings. PYP teachers need to use practical activities to further the students' understanding of the concept being taught, and extend their knowledge through careful questioning and discussion.

Darby (2005) examined science learning in twelve-year-old students over a year, focusing on one particular class and employing a variety of methods of data collection. The teacher emerged as being the determining factor in the students' enjoyment of science. The teacher in the research worked in a constructivist way engaging the students by identifying real life experiences that they are familiar with

to enable them to comprehend the unfamiliar. Students were encouraged to contribute to the construction of knowledge through taking part in explanations, class discussions and when clarifying their understanding. The way that a teacher sets the tone for the classroom environment can support the students in feeling comfortable in exploring their ideas and feeling supported when demonstrating misconceptions. A comfortable environment in which it is acceptable to be wrong will support the students in their journey toward autonomy. Darby (2005) discovered that students felt they learned better when their teacher was passionate about their subject, provided a nurturing, supportive environment and made them feel comfortable. She found through student feedback that the teacher was pivotal to student engagement in two distinct ways. One related to science instruction motivating learners and teaching for understanding and the other Derby termed "relational" as this referred to the way that the science teacher developed a relationship with her students. Both of these aspects would support self-regulated learners who would feel supported in the classroom by the relationship they have with the teacher as well as motivated by the excitement and interest in the subject shown by the teacher. Feeling comfortable in the learning environment also makes students more likely to take risks with their sharing of ideas and to be more autonomous in their learning.

Benton (2014) examined metacognition in the teaching of music. She focused on the students' growing awareness of their thought processes. The students planned and monitored their learning to assess their progress as well as evaluate their effort. These actions resulted in progressively greater degrees of self-awareness and self-

regulation. Practising metacognitive processes and developing these skills leads to learner independence and lifelong learning. Benton (2014) cites Marzano's (2000) new taxonomy developed from Bloom's Taxonomy where the metacognitive system is one of three systems involved in developing how students think. Metacognition as the teaching of thinking skills implies that a teacher solely teaching content is not sufficient, higher order thinking skills are also needed. Benton (2014) sees metacognition as content specific though there are general areas of metacognition such as goal setting, concentration, management and self-monitoring, all self-regulatory practices which can be content-independent.

In considering environments that support self-directed, autonomous learning, we can also consider the integration of technology within today's curriculum. Alm (2006) particularly focused her study on computer environments in relation to computer assisted language learning. These virtual environments can be seen as motivating to students. Alm (2006) states that autonomy supportive feedback lends structure to the teaching programme without controlling. Her study involved the examination of a series of computer tasks varying the level of autonomy provided as well as the amount of structure provided. She sees the careful balance between structure and choice as allowing learners to become autonomous. This relates to the IB 's PYP programme which is more of a framework, the underlying structure that allows teachers and students choice regarding the detailed focus of their learning in Units of Inquiry.

Richardson (2012) documented how a teacher can help students learn by pairing personalised learning and technology. Motivation to learn was also a focus through

the students selecting the topics that interested them. Often technology use will allow the student to be more self-directed in their research, as with the Internet rather than book-based research, the student can refer to more sources in their inquiries.

Van Loon et al (2012) also explored the use of technology through digital learning tasks to motivate students in the school environment. They looked at autonomy support and structure and found that motivation and learning outcomes were most positively affected by a combination of both. The study focused on ten and eleven year old students from a selection of schools in the Netherlands. The digital learning task had student-selected options. The giving of options can involve too much choice but balanced with an underlying structure is seen as more successful in terms of student engagement and autonomy support. Help, goals and expectations can be set to provide structure within the task to support the more autonomous aspects of the digital learning task.

Developments in technology have led to the introduction of one to one iPads to the older Primary classes. This initiative relates to self-regulation and motivation for the students in that having one's own iPad to use in classes enabled the students to create content and teachers to differentiate instruction and assignment choice. Bennett (2012) examined the use of a small number of iPads in a class and explained how the tablets support and enhance learning as well as help with more individualised work. The ownership in a one to one programme however gave more responsibility to the individual student. Means (1994) categorised technology tools as having three purposes; teaching, answering questions and communication. The

iPad can be a tutor, through teaching content or involving the practising of particular skills. Technology enables us all to explore more easily the questions we have. The social aspect of communication through social media as well as the iPad as a presentation tool adds to the effectiveness of the technology now available. The teacher's expertise and creativity is key to any initiative and particularly with regard to the use and integration of technological tools. The iPad or any tablet involves the students in learning 21st century skills. The challenge for the teachers is to integrate the use of technology successfully into their teaching.

The next section focuses on specific aspects of pedagogy that encourages self-regulated learning.

2.5 Pedagogy that promotes Self Regulated Learning

Paris and Winograd (1990) described principles teachers can use to design learning experiences for the classroom to promote autonomous learning. These principles include self-appraisal, setting one's own goals, the teaching of self-regulation and exploring how self-regulation can become part of the identity of the individual. Self-appraisal or self-assessment could be based on a rubric and involve a student assessing themselves on a summative task at the end of a project. Following this activity, goals could be set for their next unit of work. Teachers promote self-regulated learning through scaffolding the student's learning experience by teaching skills required for independent study or strategies to use in their writing. Teachers may also guide students with the co-construction of a self-assessment rubric that they have input into as well as using the students' language so they have a greater

understanding of the requirements of the assessment task. In an environment which supports and gives value to self regulated learning, the individual will gain a personal awareness of their learning abilities and know their strengths and weaknesses in order to set themselves personal goals.

Paris and Winograd (1990) see self-regulated learning as the synthesis of many constructs in learning and motivation and as directly relevant for teachers. The learning environment, the teaching of relevant strategies and the autonomy support of the teacher are all involved. Therefore self-regulated learning can be seen as the fusion of Pintrich and De Groot's (1990) "skill" and "will". The "skill" involves knowledge and action and the "will" relates to the student's own motivation, hence, self-regulated learning,

> "Is a combination of knowledge about appropriate actions coupled with motivation to pursue goals supported in environments that allow students to be autonomous."
>
> (Paris and Winograd 1990 p.99)

From early in the educative process teachers need to make explicit the behaviours required to develop the students' motivation and "will" to learn. The learning environment is therefore a vital component in any consideration of the development of self-regulated learners. This is the reason each school's curriculum is explored in this study as well having the teachers involved completes a questionnaire. The teacher's stance with regard to student autonomy as well as the curriculum taught may have an effect on the students' responses to the questionnaire.

The curriculum and the pedagogy that the curriculum is founded upon are vital to

support the individual's motivation for learning and the development of autonomous learning. In this research an examination of the context in which the students are learning will be necessary to discover whether autonomous learning practices are embedded within the various curricula of the different schools. In IB curriculum schools teaching the Primary Years Programme (PYP) there are aspects of the curriculum for the students that demonstrate many of the concepts involved in self-regulatory, autonomous learning. The IB is a value driven curriculum as across all three phases, primary, middle and high school there is the Learner Profile. This is a set of attributes, or values that everyone involved with the programme tries to embody. As mentioned previously, these values are discussed and highlighted throughout the learning process and as such are embedded in the curriculum that the young students experience. The circular PYP curriculum model has the child at the centre of it with the Learner Profile around them. The next layer moving outwards is the written, assessed and taught curriculum. Then come skills, concepts, attitudes and action, all seen as essential elements of the curriculum. The traditional subject areas are in the next layer and six transdisciplinary themes form the outer layer of the circle. Reflective practices are an integral part of the curriculum and individual goal setting is a key component as well as the students' engagement in self-directed inquiry. In this study it will be interesting to compare the different curricula models with regard to the development of self-regulation in primary age students.

In the development of autonomous learning another useful strategy outlined by Schunk (1999) is self-verbalisation. In mathematics education the benefits of

explaining one's mental process with regard to calculations or problem solving in words, either orally or written, is seen as aiding in internalising one's strategies and enhancing the understanding of the concepts involved. Schunk (1982) found that children who verbalised explicit strategies and self-construction showed the highest self-efficacy. Certainly self-reflection and verbalisation of understanding is effective in developing and sustaining a learner's motivation and self-regulatory behaviour. Schunk (1999) sees social factors affecting the values and beliefs learners' hold with regard to their achievement. His theory is that as this social information is internalised learners use it to self-motivate.

The research carried out by Schunk and his colleagues investigated strategies teachers could use to scaffold the students' development towards autonomy and motivation enhancement. Schunk and Hanson (1989) videotaped certain students solving mathematical problems. They then showed the students the video and then had the students practice problem solving again. When they assessed the children who had viewed themselves as well as those who had not been videoed there were differences noted in motivation and self-regulatory ability. The students who had been videoed and who had then watched themselves were more motivated when approaching problem solving the second time. Watching themselves as well as reviewing the lesson's content scaffolded their understanding and reinforced the concepts they were learning. This is also interesting in terms of self-modeling and in reflecting on one's own performance. Students viewing themselves on video could be more reflective regarding their skills both improving their self esteem as well as their performance at problem solving. An "I" statement regarding the students'

satisfaction at achieving successfully in their learning is included in the student questionnaire as well as reflective statements as these factors contribute to the students' self-regulatory behaviour.

In Hattie's Visible Learning (2012) he suggests that if we want students to become their own teachers, self-regulation must be taught through content domains. As in Schunk and Hanson's study (1989), learning about mathematics requires an understanding of the strategies that the student may need, which relates to that subject. Although some skills and strategies taught may cross the content domains and be equally useful in different areas of the curriculum, there will be some subject specific skill teaching required also. Strategy training must be part of the teaching context and imbedded within it. The students need to know the various strategies relevant to the task in hand and the how, where, when, and why of their use. Lavery (2008) found the highest effect on student learning came from strategies aimed at Zimmermann's (2002) Forethought phase. This would involve teaching and scaffolding the learning of goal setting and planning, self-instruction and self-evaluation. Sitzmann and Ely (2011) reviewed learning strategies and found that those that related most positively to student achievement were setting goals, persistence and concentration, the amount of effort put into a task and having the confidence to succeed. A lot of these qualities are dependent on the individual student's motivation and interest in learning. This comes back to the teacher needing to create the right physical and social environment to support the learner. Students need to feel comfortable in their classroom both physically and emotionally. A culture of support and care is required to be in place for the

individual in order for the learning to take place successfully.

Hattie (2012) mentions Wiggin and McTighe's "Backwards by Design" principle (2005). This is a strategy utilised in the IB's PYP unit planning for teaching. In planning a unit, teachers start with the end point in mind. The first piece of planning after writing the central idea for the unit and working out which concepts and skills are to be taught is to plan the summative assessment task to end the unit with. In this way teachers chart the knowledge, skills and concepts required through the unit teaching to enable to students to complete the summative assessment task. As Hattie (2012) suggests, this backward design process allows teachers more flexibility to adapt their plans as they teach. When teaching a unit a teacher can make assumptions regarding their students' prior knowledge and then have to adapt the learning experiences in place to take in some instruction prior to the planned teaching. In a unit focused on the effect of weather on living and non-living things it is assumed that students understand the difference between living and non-living but as a teacher you may discover in the initial finding out stage that the students are not sure of this basic idea and may need some further exploration of the concept prior to the unit. Hattie (2012) particularly focuses on teachers needing to teach the strategies of learning, he terms it "adaptive expertise". This is when teachers are able to alter what they are teaching depending on what they have observed in the classroom. Seeing where individual students are and providing them with the next step to progress. Teachers are required to be continually innovative in their teaching, relating what they teach to what is perceived as required by their individual students. Continual innovation and this ability to change as required is what self-regulated learners need to develop as they too have to be experts at

adaptation.

White and Frederiksen (1998) explored how to make scientific inquiry more accessible to students. The focus of their study was middle school students, but their findings apply to all learners. Their focus was on the students' metacognitive processes particularly reflective practices. They looked at using scaffolded instruction within the scientific inquiry process. Reflective processes were seen as vital in developing the individual's autonomous learning strategies. Ideas based on constructivist theories of learning saw the scientific inquiry cycle using reflection built in as driving the inquiry to the next stage. White and Fredriksen (1998) acknowledged the importance of the classroom context within their study seeing the classroom becoming a research community. The students used a scientific inquiry cycle. In the IB's PYP units a cycle of inquiry is often used to lead the inquiry process from the early stages of finding out about the unit's central idea to developing ideas and sharing knowledge as well as evaluating the learning. Peer and self-reflection were built into this scientific inquiry process with the aim of developing more independent inquiry as the units progressed. In the study an important point is made regarding student self-assessment. To effectively assess themselves students need to understand the criteria by which they are being judged and how they judge themselves. This is all part of the pedagogy of the school as well as the classroom climate. In the PYP students are often involved in planning their own assignments, which would also include them in the creation of rubrics by which they would self and maybe peer assess each other. The authenticity of the inquiry process is seen as a contributory factor to the success of the learning for the students. In the PYP too, teachers plan units that are as authentic as possible to maximize the learning for

their students. Authentic contexts for learning involve careful planning on the part of the teachers to situate the concepts being explored within areas that the students can engage with enthusiastically. In a unit looking at leadership at my previous school, the ten and eleven year old students discussed what qualities they were looking for in a school leader as the school was in the process of hiring a new head teacher. They put their ideas into a letter and sent it to the School Board. This learning experience was more meaningful for them as it related to their real life at school. The unit involved a great deal of exploration of what leadership was and different leaders in society. The students also interviewed the local mayor and asked him about the qualities he thought were important for a leader. They related these to the IB's Learner Profile previously mentioned.

In White and Fredriksen's study (1998) self-assessment focused on the skills of inventiveness, systematicity and reasoning. These metacognitive skills include divergent "out of the box" thinking, planning work and the development of logical arguments. These are all vital skills in developing self-regulatory, autonomous learners. The development of reflective ability and critical thinking and questioning are required skills for the self-regulated learner and require a central role in the school and in the teachers' pedagogy.

Assessment is another issue that affects motivation in students of all ages. Utilising self-assessment tools as well as developing authentic performance related assessment would benefit students greatly and add to their motivation as well as developing their autonomy as learners. Paris and Paris (2001) cite portfolios as excellent tools to support self-assessment and to encourage reflective skills in

learners. Teachers work with their students through the year and engage the students in selecting and evaluating pieces of work for inclusion into their portfolio, which become a snapshot of the students' learning and development over the years. In the PYP portfolios are used throughout the programme to celebrate the individual's learning, as a tool in student-led conferences with parents as well as an aid to goal setting.

Harland (2003) used Vygotsky's concept of the zone of proximal development (ZPD) to inform project-based learning. Vygotsky's constructivist theory is that we start with a learner's current knowledge then the student constructs their own meaning when applying themselves to problem solving. Therefore with all learning the teacher, or the older student needs to know the level of understanding that is present and then the learning can be extended, at times some teacher support or scaffolding is required to help the student move forward in their thinking and learning. Vygotsky (1978) also believed in the use of authentic, real life problems to engage the learner. Many of these ideas exist in the IB's social constructivist philosophy. This also supports student autonomy, as the role of the teacher in these learning experiences is more supportive as a facilitator rather than the fount of all knowledge. Interestingly, in Harland's study (2003) the teachers acknowledged a sense of loss when the students became more autonomous and needed them less. Some teachers may enjoy the control aspect of a teacher's role and like the feeling of power. However other teachers are driven by wanting the students to develop independence.

Sierens et al (2009) studied the interplay between teacher autonomy support and structure in relation to self-regulated learning. His focus was slightly older students than this study but his findings have relevance to the relationship between the stance of the teacher and the students' self-regulatory development. Sierens et al (2009) found that autonomy support on the part of the teacher,

> "Nurtures students' interest and intrinsic motivation."
> (Sierens et al 2009 p.60)

Their conclusion was that the component of self-regulated learning should be delivered in an autonomy supportive fashion to be most effective. Could a controlling teacher teach self-regulated learning practices? I believe the autonomy supportive teacher differs from a controlling teacher in a fundamental way. I feel there is a shift from the teaching of subjects, imparting knowledge to be tested toward the teaching of students, individual learners who the autonomy supportive teacher aims to develop as self-regulatory, autonomous learners. The IB's PYP is an inquiry based framework which has self-regulatory practices built into it. Its philosophy and pedagogy is founded on developing lifelong learners, critical and creative thinkers through a skills based curriculum. Teachers who work within this system are expected to embrace the philosophy and pedagogy and can be supported through IB training and by the learning community at the school. Collaborative learning for the teachers as well as the students is one of the cornerstones of the IB curriculum.

2.6 Summary

In this second chapter self-regulated learning has been defined and its development explored. Its relationships to other constructs have been considered. The importance of the teacher has been discussed as well as the effect of the environment, including the use of technology. The pedagogy that promotes self-regulated learning has been outlined.

The next chapter introduces the methodology of the study.

Chapter 3 Method

> "Research is to see what everybody else has seen, and to think what nobody else has thought"
>
> Albert Szent-Gyorgyi (1957) p.57

Introduction

The aim of this research is to explore self-regulated learning in students at the end of the primary school through a variety of instruments. This chapter will begin by providing a discussion of the methodological approach adopted in this study. It will then give details of how the data were collected, what instruments were utilised and an outline of the key methods of data analysis adopted. The chapter also provides details of the participants and the schools from which they were drawn.

The chapter concludes with the consideration of the ethical issues associated with the study.

3.1 The methodological approach

As already stated in Chapter 1 of this thesis the research questions for this study are:

- Does the International Baccalaureate's Primary Years Programme facilitate self-regulated learning in students?

- Does the International Baccalaureate's Primary Years Programme facilitate students' self-regulatory learning more than other curricula models?

- What is the relationship between teachers' approach to student autonomy and the students' autonomy?

- To what extent do different curricula embed the promotion of self-regulated learning and autonomy within them?

In order to answer the research questions an appropriate research approach was required. The research approach selected is a mixed methods one combining quantitative and qualitative styles. This involved data collection from two questionnaires in a number of different schools (one questionnaire for students and another for teachers) as well as descriptive analyses of curricula, discussion of two open-ended sentences from the questionnaire given to students and individual follow up student interviews with ten and eleven year olds in one of the IB schools in the survey. These methods were selected to enable a comparison of the students'

responses to their teacher's motivational teaching style. The various curricula information of the different schools was examined to ascertain to what extent autonomy is embedded within the schools' pedagogical approaches.

The overall theoretical and epistemological stance of the research is interpretative, as in this study information is being sought utilising a number of different methods of data collection through a mixed methods approach.

Patrick and Middleton (2002) argue that multiple methods are required when investigating self-regulated learning because only a variety of methodologies would enable us to comprehend its complexity. They caution against the sole use of surveys explaining that there are other perspectives including the instructional context to be taken into consideration. In this research the mixed methods approach allows for a variety of viewpoints to be taken into consideration.

Gorard (2001) sees quantitative and qualitative approaches as complementary. The marriage of both approaches is required he believes, as any quantitative relationships found will need the verification of the qualitative description to be fully explained. Selecting a mixed methods research paradigm combining quantitative and qualitative approaches can have its challenges. However, it is pleasing to read that Johnson and Onwuegbuzie (2004) view this as a research paradigm whose time has come. They speak of the mixed methods research as the third approach sitting between the quantitative and qualitative approach and offering a multiplicity of viewpoints and perspectives. Some researchers argue against the combination of the

two paradigms of qualitative and quantitative research. Denzin and Lincoln (2005) suggest that mixed methods research moves away from the interpretative foundation of qualitative research by the inclusion of quantitative data. However Bryman (2007) identified barriers to integrating qualitative and quantitative research. He identified a need for studies to be written up that are mutually illuminating. Researchers should not separate the analyses from the quantitative and qualitative data but relate them to each other. The challenge is how to write the research up in a way that blends the two methods together. Other researchers view the mixed methods approach as incorporating the strengths of both. Collins, Onwuegbuzie and Sutton (2006) identified four rationales for using a mixed methods research approach. These are: participant enhancement, instrument fidelity, treatment integrity and significance enhancement. A mixed methods study, they suggest, can involve more participants as well as enabling the researcher to include the use of more instruments as well as creating new ones. Using a mixture of quantitative and qualitative methods can deepen the understanding of what is being observed as well as increasing the richness of the data. Creswell et al (2006) believe that qualitative research can be prominent in mixed methods research not compromised by it.

Johnson (1997) describes validity as being seen as particularly relating to the quantitative research tradition. Validity has now been utilised by qualitative researchers as well, to mean credible and trustworthy. Strategies used by qualitative researchers that support validity involve the researcher acting as a detective, searching for evidence. Other strategies utilised include low inference descriptors,

for example using verbatim quotes from participants in the research. Johnson (1997) also discusses the notion of reflexivity for the researcher. The researcher's background and experience will affect their perception of the results. Denzin (1989) explains that all researchers bring their own preconceptions to their work, since "Value free interpretative research is impossible." (p.23) As a researcher examines the data from their study they are bound by their experience and background, and will analyse their findings from their viewpoint.

Using mixed methods involves the triangulation of data. In the case of this research there is multiple data from students, teachers and schools and multiple methods by using questionnaires, curriculum information and student interviews. Jick (1979) talks of triangulation in action when mixing qualitative and quantitative methods. The mixed methods approach is a convergent methodology. The two methods are seen as complementary rather than being rival camps. Using a combination of qualitative and quantitative approaches in this research will enable comparison of the students', teachers' and schools' data. Olsen (2004) sees triangulation as not just validation of data but also as "deepening and widening one's understanding." Will the most self-regulated students have the most autonomy supportive teachers and which curriculum will support this correlation? Using both methods will enrich the understanding of the subject. Traditionally theses show statistical data even if mixed methods were used. By using the mixed methods approach the aim is to report evenly on both the qualitative and quantitative data.

Patton (1999) looked at the nature of qualitative analysis, which he sees as more

creative than statistically based quantitative analysis, It can be viewed as it relates to the, "Insights and conceptual qualities of the researcher," (p.1190).

Butler (2002) used qualitative methods to improve understanding of self-regulated learning and the learning environments that support it. Using a combination of quantitative and qualitative research methods could be seen as a Renaissance approach to research, the whole being greater than the parts and drawing on the strengths of a mixed methods approach to improve the outcome. The creative insights brought to the data collected, as well as the different ways to present the findings will hopefully clearly demonstrate some answers to the research questions as well as generate further inquiry. The next section focuses on the participants in this study.

3.2 The participants

In considering the main question of the research whether the International Baccalaureate's (IB) Primary Years Programme (PYP) facilitates students' motivation toward self-regulatory, autonomous learning a range of student responses were collected from different curricula schools.

The participants for this study were four hundred and four students in the final year of primary school aged between ten and eleven years of age. A hundred and seventy-eight students were male and two hundred and twenty-six students were female. Table 3.1 below shows the breakdown of the number of students from each school along with information of the individual school type. In some schools the

cohorts of final year students were in a single class, in larger schools there were a number of classes of the same age student. In addition twenty teachers also participated in the study.

Table 3.1 Participant details

School	Total students	Male	Female	Teacher
Pilot School UK (PSUK)	30	17	13	1
British School Dubai (BSD)	131	56	75	4
South African School (SAS)	18	10	8	1
Nigerian School 1 (NS1)	8	4	4	1
Nigerian School 2 (NS2)	16	4	12	1
Nigerian School 3 (NS3)	6	1	5	1
Nigerian School 4 (NS4)	8	5	3	1
International School Dubai (IBD)	45	20	25	2
International School Germany (IBG)	80	32	48	4
International School Vietnam (IBV)	6	2	4	1
International School Singapore (IBS)	46	22	24	2
International School Denmark (IBDE)	10	5	5	1
12 schools Total=	**404**	**178**	**226**	**20**

The next section examines the context for the study and outlines the participating schools and their curricula.

3.3 The context for the study

The students were drawn from twelve schools across the globe (refer to table 3.1) the different schools represent different curricula. The schools were selected to have both IB and Non- IB schools and were principally opportunistic voluntary samples. The table below (table 3.2) shows which schools represent each curriculum.

Table 3.2 Participating Schools' Curricula

School	Curriculum
Pilot School UK	UK National Curriculum
British School Dubai	UK National Curriculum
South African School	National Curriculum South Africa
Nigerian School 1	Montessori
Nigerian School 2	Nigerian curriculum
Nigerian School 3	Nigerian and British curriculum
Nigerian School 4	Montessori and Edexcel International curriculum
International School Dubai	International Baccalaureate Primary Years Programme
International School Germany	International Baccalaureate Primary Years Programme
International School Vietnam	International Baccalaureate Primary Years Programme
International School Singapore	International Baccalaureate Primary Years Programme
International School Denmark	International Baccalaureate Primary Years Programme

According to Weiner (1990):

> "School motivation cannot be divorced from the social fabric in which it is embedded." (Weiner 1990 p.621)

Therefore the schools and their varied educational and cultural backgrounds are a vital piece in the research jigsaw as the data collected will need to be viewed in

relation to the students' learning environment. Within the twelve schools involved in the study there is a variety of curricula backgrounds. There are five International Baccalaureate schools and seven others where Nigerian, Montessori, South African and British school systems are involved. Some schools use a mixture of curricula. The IB schools are in Dubai, Denmark, Singapore, Vietnam and Germany. As the research question for this study focuses on whether the IB's Primary Years Programme (PYP) is intended to prepare students to be more self-regulated autonomous learners a variety of IB schools were included in the sample to see if results were consistent across the IB schools.

At the time of the initial data collection I was in the United Arab Emirates working in a school that was part of a group of schools in the area. I also used my network of connections to find colleagues who were willing to give my questionnaire to the ten and eleven year old students in their schools. In addition to the student questionnaire, a questionnaire was given to the teachers of those students to ascertain their orientation toward motivating students on a continuum from controlling to autonomy supportive, as this is a vital factor in analysing the students' responses. The next section outlines the materials and measuring instruments used in this research.

3.4 The materials and measuring instruments

3.4.1 Student questionnaire

The student questionnaire created for the purposes of this study was based on the Academic Self-Regulation Questionnaire from Rochester University's Self-Determination Theory (SDT) website. SDT differentiates behaviour as to the degree it demonstrates autonomous self-regulated learning as opposed to controlled functioning. The Academic Self-Regulation Questionnaire (SRQ-A) was created to ascertain why older elementary and middle school students do (or do not do) their homework. Ryan and Connell (1989) developed the questionnaire after working with groups of students. The series of studies outlined in the paper by Ryan and Connell (1989) validates the SRQ-A questionnaire, who worked with the assistance of primary school teachers to identify the four areas considered central for academic performance. The areas examined were completing homework, working on classwork, answering questions in class and a more global issue of attempting to do well in school. The Ryan and Connell (SRQ-A) questionnaire was formulated from consideration of the perceived locus of control for students in the learning situation.

The student questionnaire adapted for use in this study has a Likert-type four-point scale. A four-point scale was used as this has been found by researchers at Rochester to be the optimum number for younger students to rate themselves on. As the students at the end of the Primary Years Programme are ten or eleven years of age and are in the younger range of the target audience for this questionnaire the same

scale was selected for use. Twelve “I” statements were constructed, which if all were “Very True” would indicate that the student had developed a reasonable level of autonomy and that they are becoming self-regulatory in their learning. The “I” statements were formed to be as neutral as possible without using any IB or other curricula specific terminology. Enjoyment of learning and wanting to acquire new knowledge, seeking challenge as well as exhibiting goal setting and self-reflective strategies are included. The desire to be considered a “good” student and the student’s personal responsibility was included as part of the questionnaire as well as learning new skills and strategies to aid learning.

The open-ended questions at the end of the student questionnaire are qualitative and intended to provide additional information regarding the individual student’s learning. These comments will be analysed as to their significance to autonomous learning. The student questionnaire and instructions for administration utilised in this study are included in Appendix A1 and Appendix A2.

3.4.2 Teacher questionnaire

As the learning environment and particularly the teacher’s stance towards autonomous, independent learning are seen as pivotal to the student’s development towards being a self-regulated learner, a questionnaire was also given to the teachers involved at the various schools. The schools’ curricula will be investigated to discover if inclusion of specific teaching and experiences of self-regulatory skills is part of the pedagogy and teaching practice, with responses compared for similarity

across IB schools in different countries. The responses will also be compared to discover if there is any difference in the development of self-regulated learning at the ages of ten and eleven years across the varying schools.

Although in some school contexts there may be specialist teachers also involved with the education of the students at the end of their primary years. The homeroom teacher will spend the majority of his or her time with the students and be most influential in their learning and their level of self-regulatory behaviour. Will one curriculum produce students who are more autonomous in their learning than another? Will there be a correlation between autonomy supportive teachers and self-regulated learners? Inferences will be drawn from the samples collected. Variables involved in the students' questionnaire are gender, nationality and the amount of time the student has been learning in the school. The students will all be from a similar age group and in their last year at Primary school. The school sample will involve a number of different curricula and students from various countries.

The Problems in Schools questionnaire (PS) was also obtained from the Rochester University website. It was given to the teachers who teach the students in the study. The questionnaire aims to identify autonomy supportive teachers and how they teach and motivate their students. Access was requested from Rochester University SDT website and permission was given to access and use the questionnaire for research purposes. For reference, a copy of the questionnaire used in this study is included in Appendix B. Reeve et al (1999) critically evaluated the Problems in Schools (PS) instrument in their research paper. They conducted three studies that confirmed the validity of the PS questionnaire. They also identified a problem with

the moderately autonomy supportive (MA) scale. In their studies it appeared that the MA scale correlated with moderately controlling (MC) and highly controlling (HC) rather than highly autonomy supportive (HA). In their research paper they suggest that if MA is zero-rated in the calculations the PS instrument will still identify the autonomy supportive and controlling teachers. Therefore this suggestion will be followed in the analysis of the teacher questionnaires. The PS questionnaire can be found in Appendix B.

The PS questionnaire involves eight short stories of school situations that describe motivational related problems that students may encounter. Each vignette gives four ways a teacher could respond to the student's issue and each way represents a point along a continuum from highly controlling (HC) to highly autonomy supportive (HA). The HC response involves the teacher using extrinsically motivating strategies to encourage the appropriate behaviour. The moderately controlling response (MC) involves the teacher in appealing to the student's sense of obligation to do "the right thing". In the moderately autonomy-supportive response (MA) the teacher encourages the student to consider how their friends would solve the problem. For the HA response the teacher encourages the student to solve the difficulty themselves. For each vignette the teacher rates each of the responses on 1-7 Likert scales. Each scale's score is averaged and then the four scores are calculated using a pre-set formula.

The quality of student motivation is related to the individual style of the teacher and the way they motivate their students. The statistical information regarding the educative stance of the teachers involved from the teachers' (PS) questionnaire as

well as curricula information from the individual schools will be vital in analysing the data.

Questionnaires were received from the pilot UK school, the IB and British school in the Dubai group of schools previously worked in, a series of Nigerian schools, a South African school and IB schools in Denmark, Germany, Vietnam and Singapore. To further explore student ideas regarding how they learn, a group of ten and eleven year old students in one of the IB schools in the survey were given follow up interviews.

3.4.3 Student interviews

As a follow up to the questionnaires a number of students at one of the IB schools in the survey were interviewed to discuss how they believe they learnt best. The intention was to relate the ideas of the students to answers to the sentence starter "Learning is…." from the student questionnaire, providing some insights into teacher stance and student motivation to learn.
Four statements about learning were selected and read to the individual students and their comments were recorded and transcribed.

The four statements that were introduced to the students were:

- Students learn easily when their brains are ready.
- Students learn when they're given the chance to experiment and use equipment.

- Students learn when they start to think about what other people are saying.
- Students learn when teachers stand in front of the class and tell them things.

The first statement in the interview relates to readiness and motivation to learn, the second is concerned with more hands-on experiential learning. The third statement deals with collaborative learning and the notion of other people's opinions. The fourth is concerned with the stance of the teacher as "sage on the stage" and whether the students feel they learn in this way. After discussion of the four statements the students were asked to write their own fifth statement: "Students learn when…". As the interviews developed, students were also able to comment on each other's suggestions prior to writing their own. An anonymised student interview transcript is included in Appendix C.

The next section charts the way the study was conducted.

3.5 Procedure

3.5.1 The Pilot study

The modified student questionnaire was administered in a school in the United Kingdom prior to sending it out to the other schools in the study. The questionnaires received indicated that the procedure was carried out as detailed in the sent instructions and that the students had been able to follow the instructions and complete the questionnaire appropriately. No further modifications were required.

3.5.2 The Main study

The student and teacher questionnaires were sent as either hard copy or in PDF soft copy to the participating schools at the end of May 2012 for them to complete in the first week of June 2012. The schools mailed or scanned and emailed the responses back. Numbers and letters anonymously identify the teachers and students from all the schools. The schools were also sent the Schools Consent Form, which can be seen in Appendix C1. The schools and students were given letters and numbers to identify them for the purposes of the study. AT1 would be a teacher from school A and AS1 would be a student from school A and so on. If there were more than one class of students at the end of the primary school then numbers identify them as A1S1 and A2S1, similarly A1T1 and A2T1. The letters given to the schools were selected to allow the different curriculum backgrounds to be identified, solely for the research analysis to enable the comparison of responses.

The individual schools' websites were used as an initial source of discovering whether learner autonomy is present within the curricula documentation. The school's administrators or other contacts were asked for follow up information if required. Other information was gathered from curricula specific websites such as the International Baccalaureate's (IB) website (www.ibo.org) or by examining material available to IB schools. Other curricula sources are available online.

It is anticipated that the variety of schools within the research-sampling frame will give a generalised idea as to how autonomous a varied sample of students are at the end of their primary school experience.

The next section outlines the analysis framework.

3.6 The analysis framework

The student questionnaires were analysed so that for each student there was a total self-regulated learning score as the self-regulated learning measure. These self-regulated learning scores were then evaluated across the different classes and types of school to see if a particular curriculum made a difference. The data from the twelve questions were arranged in various ways to enable this comparison of schools. The total results received were calculated as percentages and graphically represented by individual question for an overall view of all the schools. The percentages were also calculated by individual school results to enable comparison between schools. Graphs were also produced of the responses to the twelve questions by school. The results from the twelve questions were also arranged to be able to examine IB and non-IB schools' results as percentages and in graphical form. The answers received were also reorganised into gender groups and percentages were calculated to compare the boys' and girls' responses. As the school groups and gender groups varied in sizes, the percentages of answers relate to each individual school, curriculum or gender group to enable a fair comparison. The quantitative and qualitative results from the student questionnaire were also considered with relation to high self-regulated learning scores and long-term students for further analysis.

The two sentence starter answers were recorded by student and by school and were initially colour coded by topic and keywords. The students' information as to gender, nationality and number of years at the school was also included on the data sheets. A table comparing the length of time in the school was created and the responses of the long-term students assessed for comparison with the whole data.

Tag crowd was used to look at the frequency of answers to the two sentence starters at the end of the student questionnaire. The keywords initially identified in the analysis of the sentence starter responses from students were typed into a word list on the Tag crowd website and word clouds created which indicate the frequency of the terms entered by the size of the words. This process creates a visual representation of frequency. The first sentence starter was, "Learning is…" The second sentence starter was, "I would like to learn more about…" Tag crowds were created by various categories: all answers, by individual schools, IB and Non-IB school groups and by gender.

The answers to the first sentence starter (regarding students' ideas of what learning is) were further analysed using a phenomenographical iterative process of categorising the statements made to identify the main themes that emerge. This process originates from Marton (1981). In this procedure outcomes are represented as different "categories of description" and are grouped by relationship. A colleague also sorted the statements made by the students to corroborate my initial categorisation.

As with all data received, whether quantitative or qualitative, IB and non-IB schools were the major categories for comparison given that the focus of this research is to ascertain if the IB programme supports self-regulated learning more than other curricula. The data sets were also analysed in gender groups as well to see whether there might be a gender difference in the development of self-regulated learning.

The teacher questionnaire responses were tabulated and the results were calculated following the instructions for scoring from the SDT Rochester University website. The results of the students' questionnaire were examined and compared to the teacher results for each school. The teacher results were analysed by question for comparison between IB and non- IB schools and were also displayed on a number line continuum by score and IB teachers were highlighted to demonstrate the range of scores in both IB and Non-IB schools.

In order to answer the research questions the quantitative and qualitative data collected were organised by question to enable triangulation of data.

Information regarding the curricula of each school was compiled into a table for an overview. The mission statement and details of assessment practice were included as well as any relevant statements regarding self-regulated learning, lifelong learning or statements related to independent learning.

The student interviews were recorded by voice memo and later transcribed. Parents completed a parental consent form (see Appendix C2). An anonymised transcript example is included in Appendix D. Student responses were analysed and their suggestions for the best way to learn are discussed in later chapters.

Table 3.3 Overview of research method

	Description:
1.	Mixed methods approach Quantitative and Qualitative elements to study
2.	Student and teacher questionnaires- Quantitative data Student questionnaire- open-ended questions – Qualitative data
3.	Descriptive analyses of curricula
4.	Student interviews (at one of the IB schools in the survey)
5.	Participants 12 schools (5 IB 7 non-IB) 404 students 20 teachers
6.	Data presented in graphical form, tables and Tag Crowd

This chapter concludes with the consideration of ethics in relation to the study.

3.7 Ethical considerations

The research plan was submitted to the Ethics committee at Durham University and approval was sought to carry out the research. The Ethics committee approved the proposal. The research involves surveying living human subjects in schools. As explained in the procedure section, the information received is anonymised in the study and schools are identified by country and curricula background for the purposes of analysis. The parents' written consent was obtained to interview their children and also to use any statements made by their children in this thesis. The student interviews were recorded as voice memos with the verbal consent of the participants prior to the start of the interview. The administrators of each school

were contacted for their consent to the questionnaires being given to students and teachers in their schools and there are signed consent forms from each school. A copy of this form is included in Appendix C1. Any student not completing the questionnaire was considered to have not consented. Written feedback and a summary of the research findings will be given to each school involved in the study after the thesis is submitted, as it would not be practical to visit them all. With regard to the implications of the research intervention on the students involved in the study, giving a questionnaire near to the end of the academic year should not impact the students greatly.

3.8 Summary

This third chapter explained how answers to the research questions would be addressed through an interpretative mixed methods approach combining quantitative and qualitative styles. The participants and the context for the study were outlined and the materials used were described. These materials are the student and teacher questionnaires and the questions used in the student interviews. The procedure for the study and the analysis framework were detailed. A table of the research method was presented in a table of details for reference. The ethical approval for the research was described.

The next chapter examines the data gathered in this study.

Chapter 4 Quantitative Data

"Above all else show the data".

Edward Tufte p. 17 (2001)

This chapter begins with the student questionnaire and considers the complete data set with regard to results and curricular background. Long-term students, individual school results as well as IB and non-IB comparisons are included. The data collected from the teacher questionnaire are used to identify the locus of teacher control in relation to the level of teacher support for autonomy in the classroom.

The relationship between the teacher's autonomy and the students' autonomy is explored through a comparison of student and teacher results. Results are also organised by the curricular background of the schools in order to explore the IB and non-IB dichotomy. Qualitative data from the student questionnaires and the student interviews as well as information regarding the curricular background of the schools are explored in Chapter 5. Connections, patterns and interpretations are investigated further in Chapter 6. Data relating to gender are also presented at the end of this chapter.

At this stage, the results are presented and trends and relationships identified. However, discussion will be presented in Chapter 6.

4.1. The Student questionnaire

As outlined in Chapter 3 this questionnaire was developed using a four-point Likert scale comprising twelve "I" statements relating to various aspects of self-regulation and autonomous learning, which if all were Very True would indicate that the student had developed a high level of self-regulation.

These "I" statements were:

1. I enjoy my homework
2. I want to learn new things
3. I enjoy discussing ideas in groups
4. I like answering hard questions in class
5. I want my teachers to think I am a good student
6. I feel happy when I do well in school
7. I think about my work to help me improve in the future
8. I set myself learning goals
9. I am a responsible student
10. I feel I am able to work on my own
11. I have learnt new skills and strategies to help me learn
12. I am excited about learning

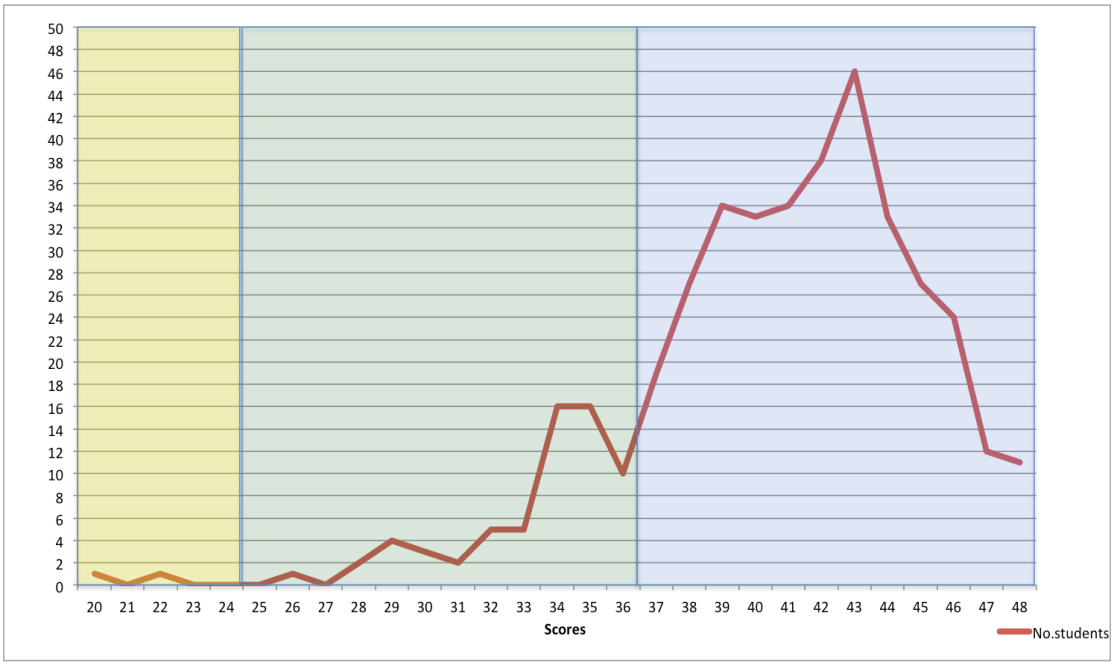
The students' choice of answers were: - Very True, Sort Of True, Not Very True or Not At All True. Very True responses scored 4 points, Sort of True 3 points, Not Very

True 2 points and Not at All true 1 point. When the student questionnaires were analysed, each student was provided with a total self-regulated learning score as the self-regulated learning measure by adding together the scores for the responses to the twelve questions. The maximum score is 48 points. The scores of the whole student sample ranged from 20 to 48 points. In this section the student scores will be presented overall and with relation to curricula. The student questionnaire also included two sentence starters, which will be examined further in the qualitative section of this data chapter. Please note that when comparing the data results by age there was little significant difference between the ten and eleven year olds answers so the data presented is from the last year of primary classes.

4.1.1. The overall scores

My sample comprised 404 student questionnaires. The distribution of scores is considered in the upper three of the four quartiles of the possible scores, as there were no students scoring in the first quartile from 0-12 points. The second quartile extends from 13-24 points; these scores would indicate a low level of self-regulation. The third quartile extends from 25-36 points and shows a move toward self-regulated behaviour. The fourth quartile runs from 37-48 points and the students in this section are considered to be demonstrating a high level of self-regulatory behaviour.

Figure 4.1 Overall student scores (n=404)



As you can see from Fig.4.1, the majority of students who responded to the questionnaire are demonstrating a high level of self-regulation. These students are in the outer layer of Boerkaert's model of self-regulation (1999). There are two (0.5%) students in the second quartile (yellow area) sixty-four (16%) in the third quartile (green area) and three hundred and thirty-eight (83.5%) students out of the total four hundred and four students are in the fourth quartile (blue area).

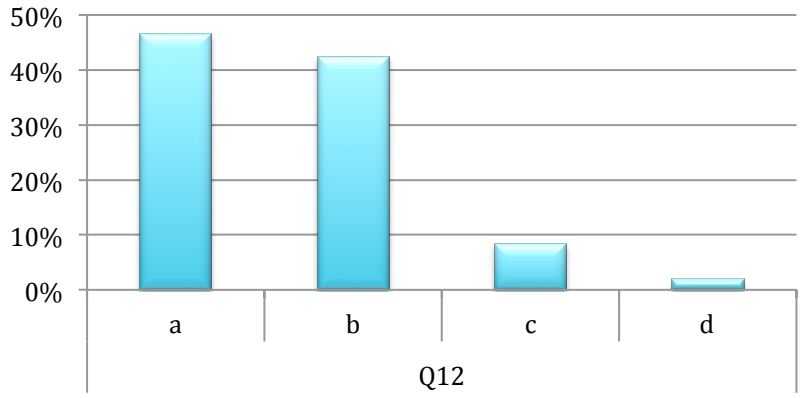
The responses for each individual question were graphed as percentage results and this data can be found in Appendix E1. Figure 4.2 below is an example demonstrating the common pattern across all the questions where the majority of the respondents answered positively.

Figure 4.2.

The student questionnaire responses to Q.12 I am excited about learning

KEY: a = Very True, b = Sort of true, c = Not Very True, d = Not At All True

The percentages below are of the total respondents. (n = 404)



4.1.2 High scoring students

Across the whole data set 83.5% of all students scored in the top quartile. These scores in the fourth quartile were also examined to identify the top scoring students who scored 40 points or above on the self-regulation measure. Forty points and above was chosen as this is the top 20% and would reflect the higher achievers in a normal school population. These top-scoring students comprised of two hundred and fifty-six students out of the total four hundred and four students, which is 63% of the total students in the data set.

In Table 4.1 below the student' scores of 40 or over are arranged by school to enable further analysis of the data. The schools are labeled to preserve anonymity but to also allow for curricular comparison. More details of the schools and their curricula are provided in the qualitative data section.

The abbreviations for the schools are:

Table 4.1 School Abbreviations

School abbreviations:	Details:
UK Curriculum:	
PSUK	Pilot School UK
BSD	British Curriculum School Dubai
IB SCHOOLS:	
IBG	International School in Germany
IBV	International School in Vietnam
IBD	International School in Dubai
IBDE	International School in Denmark
IBS	International School in Singapore
National Schools:	
NS1	Nigerian School 1
NS2	Nigerian School 2
NS3	Nigerian School 3
NS4	Nigerian School 4
SAS	South African School

As you can see in Table 4.2 below the twelve schools in the survey can be divided into five IB schools (yellow highlighting) and seven Non-IB schools. The numbers of students scoring 40 points or above on the student questionnaire are expressed as a fraction of the total number of students answering the questionnaire in that school.

Table 4.2 Student questionnaire scores of 40 points or more by school

SCHOOL	STUDENTS	%
IBS	16/46	36%
IBG	46/80	59%
BSD	80/131	61%
NS4	5/8	63%
IBD	30/45	67%
NS1	6/8	75%
PSUK	23/30	77%
IBDE	8/10	80%
NS3	5/6	83%
IBV	5/6	83%
SAS	16/18	89%
NS2	16/16	100%

The results in the table are further expressed as percentages for a fairer comparison as the numbers of students in each school varies. From the table it can be seen that there are high scoring students in all the schools surveyed irrespective of curricula background. The high scoring results are arranged in ascending order for comparison. The percentages of high scoring students range from 36% to 100% and the scores and results by school are considered further later in this chapter.

4.1.4 Long-term students:

The student questionnaire also had the students indicate the length of time they had been studying in their present school. Table 4.3 shows the range of time students had been in their present school from under a year to seven years or more. Examining the results of these long-term students in comparison with the rest of the sample may demonstrate the effect of being in the same curricula environment over a period of time. This data is not significant with relation to teacher effect, as the student would have had a number of teachers in those years.

Table 4.3 Length of time in present school

Time in School	Number of students
Under a year	11
1 year	61
2 years	37
3 years	43
4 years	49
5 years	52
6 years	60
7 years and over	74

In Table 4.4 below the scores of those students who had been in their present school for more than seven years were identified to provide a comparison with the overall data of all students. For this group the mean score is 42.4 and the standard deviation is 4.35.

In the scores on the student questionnaire, out of these seventy-four students only 13% scored under the top quartile, obtaining less than 37 points. 87% were in the top quartile.

Table 4.4 Individual student scores- students who had been in their present school for 7 years or more

STUDENT NUMBER	Score	STUDENT NUMBER	Score	STUDENT NUMBER	Score	STUDENT NUMBER	Score
3	29	151	37	195	47	272	44
5	39	152	46	198	44	277	35
26	44	156	47	199	44	280	44
30	40	**160**	41	**200**	29	287	41
51	45	164	37	**201**	42	289	43
61	37	177	42	**203**	45	293	41
65	40	**178**	45	**204**	46	297	40
82	40	180	39	**211**	37	**309**	42
85	40	181	45	214	44	314	41
93	39	182	46	**215**	43	**318**	42
97	36	183	48	**232**	34	**319**	41
100	42	186	43	233	46	322	44
117	39	187	34	234	48	324	44
119	40	**188**	43	235	48	359	35
131	43	**190**	43	236	46	365	42
136	37	191	45	237	43	**375**	34
144	42	**192**	42	238	41	**391**	38
149	32	193	44	**242**	47		
150	42	**194**	39	**244**	48		

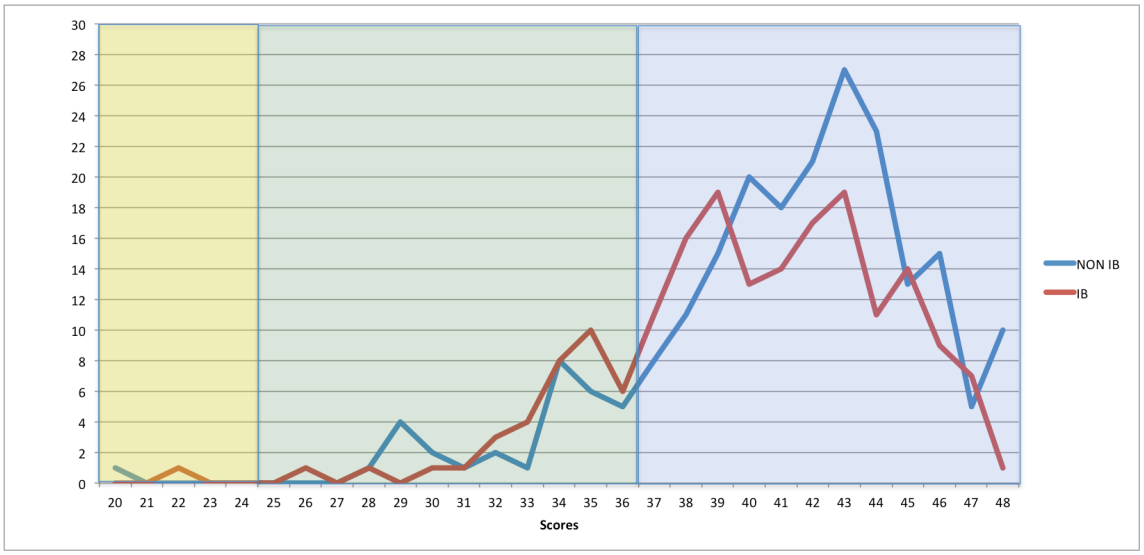
It is also interesting to note that 73% of these students scored 40 or above. (Yellow highlighting) Four students in this group scored 100%. (Green highlighting) In terms of curricular background twenty-six students in this group are from IB schools. (Blue highlighted student numbers) However, with the nature of international schools there may be students who have moved school but remained within the IB group of

schools around the world, this would not be apparent from the information collected. Out of the seventy-four students, twenty-nine are boys and forty-five are girls. (Student numbers in bold are boys).

4.1.5 The overall scores arranged by curricula

The overall results were also grouped by curricula. For the purposes of this research the self-regulated learning scores from all the four hundred and four students were arranged in two groups: the students studying in IB schools and those students who were attending Non- IB schools. The same three colour bands as in Fig. 4.1 denote the lower, mid and higher levels of student self-regulatory behaviour.

Figure. 4.3 The overall scores by curricula (IB n = 187, Non-IB n = 217)



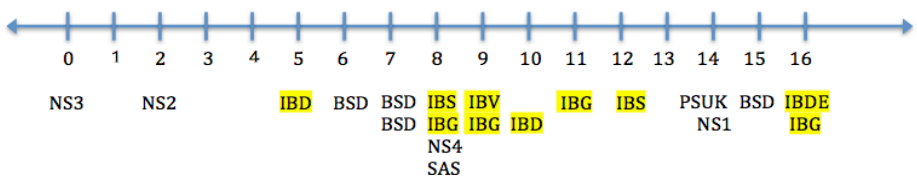
In Figure 4.3 the red line shows IB student total scores and the blue line shows the Non- IB total scores. If we compare the results in the second quartile (the yellow section) in both IB and Non- IB results there was one student at the lowest level of

self-regulation. In the middle section the third quartile (the green section) there were thirty Non- IB students and thirty-five IB students who are demonstrating a move toward self-regulated behaviour. In the fourth quartile (the blue section) there is a hundred and eighty-six Non-IB students and a hundred and fifty-one IB students who show a high level of self-regulation with regard to their responses to the student questionnaire.

4.2: Problems in School (PS) The Teacher Questionnaire

As previously outlined in Chapter 3, this questionnaire involves the teacher reading eight scenarios relating to students in schools and rating the four possible actions for each scenario as to how they would behave in these situations. Twenty completed questionnaires were received from the teachers involved in teaching the students in the schools surveyed. The focus of the questionnaire was to find out through analysis of the answers how autonomy supportive the teachers were in their teaching. As mentioned by Skinner and Belmont (1993) the teacher's autonomy support is related to the motivation of the student towards self-regulation. All the teacher responses were recorded on a chart. The responses were scored and the totals calculated. The scores ranged from 0 to the maximum of 16. The range of this data was examined and a number line was created to show the scores in order. The continuum ranges from 0-3 points Highly Controlling (HC), 4-7 points Moderately Controlling (MC), 8-11 points Moderately Autonomy supportive (MA) and 12-16 points Highly Autonomy supportive (HA).

Figure 4.4 Number line –Teachers' Scores



Highlighted scores are teachers in IB schools

The teachers' scores ranked across the whole range from 0-16 points. The two lowest scores were teachers from Non-IB schools and the highest two scores were teachers from IB schools. Out of the ten IB teachers, nine had results in the top half of the range from 8-16 points and would therefore be classed as Moderately to Highly Autonomy supportive teachers. The scores of the ten Non-IB teachers ranged from 0-15 points. Out of these ten teachers, two were Highly Controlling, three teachers scored as Moderately Controlling and the other five scored between 8-16 points and are therefore Moderately to Highly Autonomy supportive teachers according to the questionnaire results.

The teacher questionnaires were examined by question and the percentages of teachers answering either the Highly Controlling teacher response (HC) or the Highly Autonomy supportive teacher response (HA) were calculated for comparison.

Scenario A:

The first scenario involves a student who is not participating or working as well as previously and the teacher has contacted the parent but has not been able to find out any useful information. The HA answer is for the teacher to talk to the student and let him know he does not need to finish all his work now and try to help him work out the cause of his problem. In the teachers' responses 63% rated the HA response highest and 11% rated the HC response the highest.

Scenario B:

The second scenario involves responding as a parent to a student who has made more progress than expected. The HA response is to talk with their child about the report to let her know they are aware of her improvement in school and at home. 89% of teachers rated the HA response as the highest and 11% chose the HC response as the highest.

Scenario C:

The third scenario is with regard to a child losing his temper and the teacher being concerned as to him not learning the required social skills. The HA response is for the teacher to realize that the student needs more attention and to respond to him more. In the teachers responses there were only 32% HA and 11% HC.

Scenario D:

In the fourth scenario it is the parent view, which is the focus again. The student is a good football player but has failed his unit-spelling test. The HA answer is that the

parents should ask the student how he is going to handle the situation. In their responses 78% of teachers selected the HA response as their highest rating and 5% selected HC.

Scenario E:

The fifth scenario is a spelling group that has had trouble all year and the question is how the teacher could support them. The HA answer would be for the teacher to help the group create ways to learn the words together. In this question almost all teachers (95%) rated the HA response the highest with just one teacher (5%) opting for the HC response.

Scenario F:

The sixth scenario is of a student who does not fit into the class and has not been accepted by the other students. The HA teacher response would be to invite the student to talk to the other students about her relationship with them and take small steps when she is ready to. In this case there were 63% of HA highest ratings and 26% (five teachers) responding with their highest rating as the HC response. This response was the highest HC response to any question. The HC response was for the teacher to “prod” the student into social interactions and to praise her.

Scenario G:

The seventh scenario relates to repeated stealing and the parents’ reaction to being told about one incident. The HA response is for the parent to talk to her son

expressing her confidence in him and attempting to understand why he did it. 53% of teachers rated the HA response the highest and there were no HC high ratings.

Scenario H:

The last scenario is a parent focused one of a student getting average grades and the parent wanting to see an improvement. The HA response is for the parent to encourage the student to talk about their report card and what it means for the student. This question provoked a 100% result for the HA response.

Table 4.5 below shows the percentages referenced above for easy comparison. The percentages are of the number of teachers' responses for two of the four possible answers to each scenario. As the focus of this study is autonomy and self-regulated learning the interesting results are the percentages of teachers who respond as an autonomy supportive teacher in comparison with those teachers who had a more controlling viewpoint on each scenario.

Table 4.5 Teacher questionnaire-comparing Highly Controlling (HC) and Highly Autonomy supportive (HA) responses by percentage

Scenario	HC	HA
1	11	63
2	11	89
3	11	32
4	5	78
5	5	95
6	26	63
7	0	53
8	0	100

Generally, according to the questionnaire results, the teachers were more autonomy supportive in their answers than controlling. Out of twenty teachers there were six in the controlling section scoring from 0-7 points and fourteen teachers in the autonomy supportive range from 8-16 points.

The individual responses to each scenario were explored and grouped as to whether the teachers were from IB or Non-IB schools. (Table 4.6) Some teachers had selected more than one answer as their choice and an average score of these responses were recorded for the individual teacher. The higher the final score, the more autonomy supportive the teachers' answers were on the PS questionnaire. Table 4.7 continues this comparison and shows the results of the PS questionnaire and relates the teachers' scores to the students' high scores.

For ease of identification the responses are labeled with initials: the four categories are highly controlling (HC), moderately controlling (MC), moderately autonomy supportive (MA), and highly autonomy supportive (HA). These results are displayed on table 4.6 below.

Table 4.6 Teacher Questionnaire IB / Non-IB results

Scenario	HC	MC	MA	HA
1	0	6 4 / 2	5 3 / 2	11 6 / 5
2	2 1 / 1	2 2 / 0	1 1 / 0	17 9 / 8
3	2 2 / 0	5 2 / 3	12 7 / 5	6 3 / 3
4	1 0 / 1	2 1 / 1	3 0 / 3	15 10 / 5
5	2 0 / 2	2 1 / 1	1 0 / 1	18 10 / 8
6	5 1 / 4	1 1 / 0	6 4 / 2	12 8 / 4
7	0	1 1 / 0	11 6 / 5	10 5 / 5
8	0	0	2 1 / 1	19 10 / 9

N.B. There were a number of teachers' responses where more than one answer was rated as the highest.

The results are highlighted where more or the same number of teachers from an IB school selected this answer in the questionnaire compared to a teacher from a Non-IB school. In six out of the eight questions more IB teachers selected HA than Non-IB teachers, in the other two questions the Non-IB and IB results were the same.

The table below (Table 4.7) is ranked by the percentage of students' scores from each school that were in the top quartile (over 37 points). The teachers' scores and rating on the Problems in Schools questionnaire and the high scoring students' scores on their questionnaire are detailed in the table. The average scores for that school and a comment column were included for comparison.

Table 4.7 Teacher questionnaire scores and Student scores in the top quartile

Teacher Scores	School	Mean	Scores 37+	Comment
2	**NS2**	45.31	100%	1 of highest HC
10	**SAS**	42.61	100%	MA
14	**NS1**	41.75	100%	HA
5 10	**IBD**	41.49	92%	MC / MA
16	**IBDE**	41.80	90%	1 of highest HA
6 15 7 7	**BSD**	39.53	87%	2nd highest HA MC / HA MC / MC
14	**PSUK**	41.68	87%	HA
8 11 9 16	**IBG**	40.13	85%	1 of highest HA MA / MA / MA HA
9	**IBV**	41	84%	MA
0	**NS3**	44.17	84%	1 of highest HC
12 8	**IBS**	38.11	79%	HA / MA
8	**NS4**	41.75	75%	MA

In Table 4.7 above the yellow highlight denotes the IB schools. HA teachers are shown with a blue highlight and HC teachers with a green highlight.

If we consider the lower end of the spectrum of teacher behaviour, and examine the highly controlling teachers, the NS3 teacher had 84% of their students in the top quartile of scores on the student self-regulated learning questionnaire. The NS2 teacher, who was also scored as highly controlling, had 100% of their students in the top quartile of scores on the student questionnaire. Five students in this school also scored 100% on the questionnaire. If we examine the highly autonomy supportive teachers in those schools where there was a single class at this level, the teacher questionnaire results can be directly correlated with their student scores. The IBDE teacher had 90% of their students in top quartile of scores on student self-regulated learning questionnaire (Scores of 37 points and above). The NS1 teacher had 100% of their students in top quartile of scores on the student questionnaire. The PSUK teacher had 87% students in the top quartile of results. There is a correlation here between teacher stance and the students' autonomy.

In the table 4.8 the schools are ranked in order of the high-scoring students who scored 40 points or over in the student questionnaire. The number of scores of 40 or over is expressed as a percentage of the total students completing the questionnaire from that school. The high scoring students are matched with their teachers' scores for comparison. These students demonstrate the highest level of self-regulatory, autonomous behaviour and their teacher's stance with regard to autonomy support is included in the fourth column.

The blue highlighting in the table below, marks the highly autonomy supportive teachers and their students. The yellow highlighting denotes the highly controlling teachers and their students.

Table 4.8 Highly self-regulatory students and their teachers

School	% Student scores 40 or over	Teacher score	HC/MC/ MA/HA
NS2	16/16 100%	2	HC
SAS	16/18 89%	10	MA
NS3	5/6 83%	0	HC
IBV	5/6 83%	9	MA
IBDE	8/10 80%	16	HA
PSUK	24/30 80%	14	HA
NS1	6/8 75%	14	HA
IBD	30/45 67%	5/10	MC-MA
NS4	5/8 62%	8	MA
BSD	80/131 61%	6/7/7/15	MA-HA
IBG	46/80 57%	8/9/11/16	MA-HA
IBS	17/46 36%	8/12	MA

The top scoring students are from a Non-IB school. The top school NS2 had all their students score as highly self-regulatory on the student questionnaire. In fact out of the sixteen students in that class, five students scored 48 points. Three of the five highly autonomy supportive teachers had 75-80% of their students score over 40 points.

4.3 Data by school

The scores from the student questionnaires were also arranged by school to facilitate comparisons with regard to curricula. (Table 4.9) The data charts organised by IB and Non-IB are found in Appendix E3. The schools' abbreviations below indicate whether they are International Baccalaureate schools or not. Those schools labeled "IB" are all international schools using the IB curriculum. The scores of the students from each school were averaged and the range of the results and the standard deviation were calculated.

Table 4.9 Results overall by school ranked by mean

School	Mean Score	Range of results		Standard Deviation
NS2	45.31	(40-48)	8	2.54
NS3	44.17	(34-48)	14	4.84
SAS	42.61	(37-48)	11	2.79
IBDE	41.80	(34-46)	12	3.25
NS1	41.75	(37-44)	7	2.33
NS4	41.75	(35-48)	13	4.92
PSUK	41.68	(20-48)	28	6.10
IBD	41.49	(32- 47)	15	4.22
IBV	41	(32-46)	14	4.32
IBG	40.13	(33-48)	15	4.07
BSD	39.53	(29-46)	17	3.93
IBS	38.11	(22-45)	23	4.59

(All numbers rounded to two decimal places)

The highest mean score was in Nigerian School 2 the lowest mean score was from the IB school in Singapore. The highest range of student scores and the highest standard deviation was in the UK pilot school. The lowest range and standard deviation was in Nigerian School 1. Looking at the various curriculum schools the top three schools with the highest scores are all non-IB schools. In fact, in the top seven schools in the table ranked by average score there is only one IB school in that group. However, the range of mean scores is not large (7.2) and all of the mean scores fall in the top quartile of the scores for the student questionnaire (37-48 points).

Table 4.10 below shows the number and percentage of the students by school whose scores were under the top quartile and who therefore scored 36 or less points on the student questionnaire. The schools are ranked from the lowest to the

highest percentage result. The numbers of students have been included as the groups varied.

Table 4.10 Percentage of Student Scores lower than the top quartile by school

School	Number of students totals lower than the top quartile
NS2	0
SAS	0
NS1	0
IBDE	1 = 10%
IBD	5 = 11%
IBV	1 = 16%
NS3	1 = 16%
BSD	17 = 18%
IBS	11 = 21%
IBG	17 = 21%
PSUK	5 = 24%
NS4	2 = 25%

Looking at the number of students, sixty students out of the total four hundred and four students scored under the top quartile of the scores (under 37 points) and were therefore not as self-regulatory in their behaviour.

4.3.1 A closer comparison across the schools

The schools studied in this research are culturally complex and there are many differences between them. To compare the schools' individual approaches to self-regulated learning, two questions were initially selected to provide comparable evidence of independent learning. These two questions are from the student questionnaire. Question 8 focuses on learning goals and question 11 examines the teaching of skills and strategies. The percentage scores were used to provide a fairer

comparison across the schools. High scores are colour coded and conclusions suggested.

Table 4.11 Question 8 and 11 focus

School	Question 8 in % VT/SOT/NVT/NAT	Question 11 in % VT/SOT/NVT/NAT
Non IB:		
BSD	22 / 47 / 24 / 8	60 / 31 / 8 / 0
PSUK	29 / 55 / 6 / 10	71 / 7 / 2 / 0
NS1	38 / 38 / 25 / 0	63 / 25 / 13 / 0
NS2	88 / 13 / 0 / 0	88 / 13 / 0 / 0
NS3	83 / 0 / 0 / 17	83 / 17 / 0 / 0
NS4	50 / 13 / 13 / 25	63 / 25 / 13 / 0
SA	83 / 17 / 0 / 0	61 / 39 / 0 / 0
IB:		
IBD	40 / 40 / 20 / 0	62 / 33 / 4 / 0
IBG	28 / 50 / 20 / 4	53 / 44 / 4 / 0
IBS	13 / 50 / 24 / 9	48 / 43 / 4 / 2
IBV	20 / 40 / 40 / 0	20 / 60 / 20 / 0
IBDE	40 / 50 / 10 / 0	90 / 10 / 0 / 0

Green – highest VT or SOT Yellow – highest NVT or NAT

The student data from the questionnaire were also compared with the teacher data to ascertain if the students with more autonomy supportive teachers scored higher on the student questionnaire.

Question 8 asks the students whether or not they set themselves learning goals, which is a vital component of self-regulation. Goal setting is highlighted in Zimmermann's Forethought phase (2002) as well as in the outside layer of Boerkaert's model (1999) as seen on p.32. Both IB and Non-IB schools had the majority of students answering Very true or Sort of True indicating that they are goal setting as part of becoming autonomous learners. It is interesting to look at the Not

At all True responses where there are some large percentages of the students answering strongly negatively, (Not at all True). These schools are mostly Non-IB, which suggests that these schools maybe do not have students setting their own learning goals. Though if we look at both Not Very True and Not at all True and total the percentages for the individual schools, the results are different. The highest combined percentage is an IB school, closely followed by a Non-IB school. In both these schools the teachers in general were identified in the teacher questionnaire as not highly autonomy supportive (only one out of the four teachers from the non-IB school was Highly Autonomy supportive). The combined percentages create a mixed list of IB and Non-IB schools. If we match these with the most autonomy supportive teachers as indicated by their scores on the teacher questionnaire then we find that there is little correlation between the two. The lowest scoring two schools, both with zero, one has one of the most Highly Controlling teachers and the other Moderately Autonomy supportive. The third and fourth schools with the lowest student percentages do have Highly Autonomy supportive teachers.

The learning of skills and strategies is a crucial element for the autonomy of the student. This is also a component of the outside layer of Boerkaert's model (1999) as seen on p.32. Hattie (2012) also stressed the need for teachers to teach skills.
In question eleven, which asks the students if it is true that they have learnt skills and strategies to help them with their learning, all but one school had the majority of students answering positively, but there are some significant percentages in the Not Very True section. One (the highest percentage) is an IB school and there are three Non-IB schools with a significant percentage of students who did not feel they

had learnt skills and strategies to support their independent learning. It is worth noting that the teacher at this IB school only scored nine out of sixteen on the Problems in Schools Questionnaire, which makes her just above the middle of the range and only slightly moderately autonomy supportive.

The process was then repeated with four more questions. Question 2, which was about the desire to learn new things, question 7 which involves the student thinking about their work to help them improve in the future, question 10 which was about independence, the student feeling they were able to work on their own and the last question, question 12, focused on the excitement of learning.

In question 2 the results across the schools IB and Non-IB are consistent in that all students answering the questionnaire want to learn new things, all the students surveyed are motivated to want to learn, there are no negative responses at all.

It is interesting to note that the top Very True percentages are all Non-IB schools in Nigeria. Is this related to the nature of their curricula? It is unusual to have all students answering Very True. In IB schools the Primary Years Programme (PYP) curriculum places responsibility on the students to guide and lead their inquiries and as such are always learning new things. Do the Nigerian students want to learn new things more because it is not such a central part of their current learning?

Table 4.12 Question 2 and 7 focus

School	Question 2 VT / SOT / NVT / NAT	Question 7 VT / SOT / NVT / NAT
Non IB:		
BSD	73 / 27 / 0 / 0	33 / 52 / 14 / 2
PSUK	84 / 13 / 0 / 0	61 / 32 / 6 / 0
NS1	88 / 13 / 0 / 0	63 / 38 / 0 / 0
NS2	100 / 0 / 0 / 0	94 / 6 / 0 / 0
NS3	83 / 17 / 0 / 0	83 / 17 / 0 / 0
NS4	100 / 0 / 0 / 0	88 / 0 / 0 / 0
SA	72 / 28 / 0 / 0	78 / 11 / 6 / 6
IB:		
IBD	84 / 13 / 0 / 0	56 / 40 / 2 / 0
IBG	61 / 38 / 0 / 0	40 / 48 / 10 / 3
IBS	50 / 50 / 0 / 0	30 / 57 / 11 / 2
IBV	80 / 20 / 0 / 0	20 / 80 / 0 / 0
IBDE	70 / 30 / 0 / 0	40 / 50 / 10 / 0

Green – highest VT or SOT Yellow – high NVT or NAT

In question 7 the idea of thinking about your work to help you improve in the future yielded some interesting results. This question is important as it relates to students taking more responsibility for their learning and reflecting on their understanding, this question would also relate to goal setting, a crucial component of self-regulatory behaviour. Boerkaerts (1999), Zimmermann (2002) and Azevedo (2008) all reference goal setting as one of the process involved in self-regulatory learning. In question seven there were six out of seven Non-IB schools, which had Very True as the highest percentage and only one IB school out of five had Very True as the highest result. The negative responses are also thought provoking in that the highest combined percentage for Not Very True and Not at all True was a Non-IB school (16%) where three out of four teachers scored as controlling teachers. This was closely followed by three of the IB schools (13%, 13%, 10%). In these three schools

two out of seven teachers scored as highly autonomy supportive and the other five were moderately autonomy supportive.

Question 10 looked at working independently and overall the schools demonstrated that the majority of students felt they were able to work on their own. The negative results are interesting in that the four highest combined Not Very True or Not at all True are all the four Nigerian schools. The students from these schools appear to not be as independent as the other students surveyed. NS1 and NS4 have the joint highest combined percentage though interestingly the NS1 teacher scored as highly autonomy supportive and the NS4 teacher was in the middle of the results as neither highly controlling or autonomy supportive. A more controlling teacher would not encourage independent working as much as an autonomy supportive teacher.

Table 4.13 Question 10 and 12 focus

School	Question 10 VT / SOT / NVT / NAT	Question 12 VT / SOT / NVT / NAT
Non IB:		
BSD	66 / 30 / 2 / 2	34 / 52 / 11 / 3
PSUK	77 / 19 / 3 / 0	61 / 19 / 13 / 6
NS1	0 / 63 / 25 / 13	63 / 38 / 0 / 0
NS2	81 / 6 / 6 / 6	100 / 0 / 0 / 0
NS3	67 / 0 / 33 / 0	83 / 17 / 0 / 0
NS4	25 / 38 / 13 / 25	88 / 0 / 13 / 0
SA	61 / 33 / 6 / 0	50 / 39 / 11 / 0
IB:		
IBD	53 / 38 / 7 / 2	56 / 42 / 0 / 0
IBG	66 / 33 / 1 / 0	43 / 50 / 6 / 1
IBS	48 / 41 / 9 / 0	30 / 52 / 13 / 0
IBV	40 / 60 / 0 / 0	60 / 20 / 20 / 0
IBDE	60 / 40 / 0 / 0	80 / 20 / 0 / 0

Green – highest VT or SOT Yellow – high NAT or NVT

Question 12 looks at the excitement of the students towards their learning and the majority of the students responding to the question were excited about their learning. Looking at combined percentages three of the Non-IB schools and two IB schools have 100% of the students selecting either Very True or Sort of True. This overwhelmingly positive result demonstrates the general excitement in learning by the students surveyed from these schools. When we explore the negative results in the schools that had any negative responses, the highest percentages were mixed across Non-IB and IB.

The largest percentage of negative responses was the IBV school which has a Moderately Autonomy supportive teacher followed by both the British National Curriculum schools one with a Highly Autonomy supportive teacher and the other with three out of four teachers who scored as Moderately Controlling.

4.3.2 Long-term students and results by question:

The quantitative data from the twelve questions from the students who had been at the same school for seven years or more was examined with regard to the questions above to see if there was any difference in the results. Most of the questions were the same or similar results to the overall sample. Though in question 8 (regarding learning goals) there were no long-term IB respondents who selected Not at all True, 11% of the long-term Non-IB students chose this response indicating that a number of Non-IB students are not in the practice of setting learning goals. In question ten, which was concerned with independent learning, 100% of long-term IB students

answered positively whereas 10% of long-term Non-IB students answered Not Very True or Not at all True. Question 12 was also different to the whole student data set in that these long-term students had answered overwhelmingly positively with regard to their enjoyment of learning, though with a few exceptions in the Non-IB result, whereas 6% of the students answered Not at all True to being excited about their learning.

Looking at the data gathered and considering the thesis title as to whether the IB's Primary Years Programme develops students' motivation toward self-regulatory, autonomous learning, the student questionnaire responses were also grouped in Table 4.14 by IB and Non-IB schools as two groups. The responses across the four options are included from VT (Very True), SOT (Sort Of True), NVT (Not Very True) and NAT (Not At All True).

In Table 4.14 the data is stated in percentages of the total of IB or Non-IB students in the schools in each set. The blue highlighting shows the highest IB percentage for each question, five were very true responses and seven were sort of true. The green highlighting shows the highest Non-IB percentages, nine answers were very true and three were sort of true. There are 187 IB students and 207 Non-IB students.

In all twelve questions the Non-IB school percentage of answers to Very True are higher than the IB answers. In eleven out of twelve questions there is a higher percentage of IB students answering Sort Of True than Non- IB students. This will be explored further in the discussion in Chapter 6.

Table 4.14 Student Questionnaire IB / Non-IB by question

Question:	VT IB	VT Non	SOT IB	SOT Non	NVT IB	NVT Non	NAT IB	NAT Non
Q1: I enjoy my homework	15	22	54	62	23	11	9	6
Q2: I want to learn new things	66	79	34	21	0	0	0	0
Q3: I enjoy discussing ideas in groups	41	44	47	41	12	12	0	3
Q4. I like answering hard questions in class	23	31	48	43	25	22	4	5
Q5: I want my teachers to think I am a good student	79	86	19	12	1	2	1	0
Q6: I feel happy when I do well in school	87	88	12	9	1	1	1	1
Q7: I think about my work to help me improve	41	50	49	39	8	10	2	1
Q8: I set myself learning goals	27	36	48	40	21	17	4	7
Q9: I am a responsible student	44	54	51	39	4	6	1	1
Q10: I feel I am able to work on my own	58	65	40	28	4	5	1	3
Q11: I have learnt new skills and strategies to help me learn	55	65	40	28	4	7	1	0
Q12: I am excited about learning	46	48	47	39	7	10	1	3

When considering the negative responses (see Table 4.15 below) the highest percentage of IB students answering Not Very True was in question 4 regarding answering hard questions in class. The second highest was question 1 which concerned homework. In the Non-IB students' negative responses question 4 was also the highest Not Very True response. Question 8 was the second highest and this related to the setting of learning goals. In three of the student questions there was no significant difference in the responses from IB or Non-IB schools. (Yellow highlighting) In the question regarding homework a significant number of the IB students answered either not very true or not at all true. There were also similar numbers of IB and Non-IB students who did not like answering hard questions as well as not setting learning goals.

Table 4.15 NVT and NAT in IB and Non-IB student questionnaires
(Numbers of students answering)

Question	IB NVT/NAT	Non IB NVT/NAT	Totals IB/Non-IB
1 Homework-enjoy	23/9	11/6	32/17
2 Learn new things	0/0	0/0	0/0
3 Discussing ideas in groups	12/0	12/3	12/15
4 Answering hard questions	25/4	22/5	29/27
5 Thought of as good student	1/1	2/0	2/2
6 Happy when do well	1/1	1/1	2/2
7 Think about work-future	8/2	21/4	10/25
8 Set learning goals	21/4	17/7	25/24
9 Am responsible	4/1	6/1	5/7
10 Can work on own	4/1	5/3	5/8
11 Have learnt skills and strategies	4/1	7/0	5/7
12 Excited about learning	7/1	10/3	8/13

KEY: Yellow highlight - same result Green highlight - higher IB
Blue highlight - higher Non-IB

The most significant higher Non-IB negative result was the question concerning thinking about your work to help you improve in the future, most of the responses were Not Very True suggesting that students' self-reflective practices are not so prevalent in Non-IB schools. This question relates to later discussion of the qualitative data where the completion of the first sentence starter yielded responses from students linking learning to the their future lives.

4.4 Consideration of gender from the quantitative data

Although not a focus in the research questions the data from the student questionnaire were also organised by gender. Looking at the results generally, female students scored more highly than male students and therefore demonstrate a greater development of self-regulatory behaviour according to the results from the student questionnaire. Of the 404 students, 186 students were male and 218 students were female. The quantitative data organised by gender is to be found in Appendix E2.

Table 4.16 below shows the percentages of boys and girls answering in the four options from the total of each gender group. The abbreviations for the four options are explained in the key below the table.

In all but one question more girls answered very true than the boys (yellow highlighting). In the questionnaire more boys responded sort of true than girls in nine out of the twelve questions. Question 4, where the boys' responses were higher for very true, was the question regarding liking answering hard questions in class. Question 9 had a 20% difference in the positive response, more girls than boys answered very true, this was the largest difference in answers. This question related to being a responsible student. If we consider the negative responses (green highlighting), the highest not very true responses for girls were in question 4 relating to answering hard questions in class. The first question about homework also elicited higher not very true answers from both boys and girls.

Table 4.16 Student questionnaire responses by gender

	VT	SOT	NVT	NAT
Q1 BOYS	13%	56%	19%	12%
GIRLS	23%	59%	24%	3%
Q2 BOYS	70%	29%	1%	0%
GIRLS	73%	25%	0%	0%
Q3 BOYS	39%	45%	13%	2%
GIRLS	45%	42%	11%	1%
Q4 BOYS	31%	44%	20%	5%
GIRLS	23%	45%	27%	4%
Q5 BOYS	78%	19%	2%	1%
GIRLS	86%	12%	1%	0%
Q6 BOYS	82%	14%	3%	1%
GIRLS	92%	7%	0%	0%
Q7 BOYS	40%	46%	11%	2%
GIRLS	51%	40%	7%	1%
Q8 BOYS	30%	34%	22%	8%
GIRLS	34%	46%	15%	3%
Q9 BOYS	40%	53%	5%	2%
GIRLS	60%	34%	4%	0%
Q10 BOYS	57%	34%	6%	2%
GIRLS	65%	28%	4%	1%
Q11 BOYS	54%	37%	7%	1%
GIRLS	65%	29%	4%	0%
Q12 BOYS	39%	45%	11%	4%
GIRLS	52%	40%	6%	0%

(VT=Very true, SOT=Sort Of True, NVT= Not Very True, NAT=Not At All True)

The girls' not very true responses were higher than the boys' in two questions. The questions concerned homework and answering hard questions. The boys' highest not very true answer was in question 8, which relates to setting learning goals. This data is displayed in graph form in Appendix E3.

Table 4.17 below compares the high scoring students by gender in relation to their school and whether they were IB or Non-IB students and their teacher result.

The table shows that in seven out of twelve schools there were more high scoring girls than boys (yellow highlighting). In three schools there were more high scoring boys (green highlighting) and in NS2 and IBDE the results were the same for boys and girls (blue highlighting).

Table 4.17 Students scoring 40 or over by school, IB and Non-IB, gender and teacher result.

SCHOOL	BOYS	GIRLS	TEACHER
NON-IB:			
BSD	28/55 - 51%	52/74 - 70%	MA-MA-MA-HA
PSUK	11/17 – 65%	12/13 – 92%	HA
SAS	10/10 – 100%	6/8 – 75%	MA
NS1	3/6 – 50 %	5/5 – 100%	HA
NS2	5/5 – 100%	11/11 – 100%	HC
NS3	0/1 – 0%	5/5 – 100%	HC
NS4	4/5 - 80%	1/3 – 33%	MA
IB:			
IBG	17/31 – 55%	29/47 – 62%	MA-MA-MA-HA
IBD	7/19 - 36%	23/25 - 92%	MC-MA
IBS	6/23 – 26%	10/22 – 46%	MA-HA
IBV	2/2 – 100%	3/4 - 75%	MA
IBDE	4/5- 80%	4/5- 80%	HA

Generally comparing IB and Non-IB by teacher results, two out of ten Non-IB teachers were highly controlling and one out of ten IB teachers were moderately controlling. In both groups there were highly autonomy supportive teachers.

4.5 Summary

Student Questionnaire

The quantitative data received from the student and teacher questionnaires were outlined in chapter 4. Table 4.18 below shows the overall result that 338 students scored a high level of self-regulation on the student questionnaire. This number is 83.5% of the total 404 students.

Table 4.18 Overall scores from the student questionnaire

Scores	No.students	Level
20	1	Low level SRL 2 students
21	0	
22	1	
23	0	
24	0	
25	0	
26	1	Mid level SRL 64 students
27	0	
28	2	
29	4	
30	3	
31	2	
32	5	
33	5	
34	16	
35	16	
36	10	
37	19	High level SRL 338 students
38	27	
39	34	
40	33	
41	34	
42	38	
43	46	
44	33	
45	27	
46	24	
47	12	
48	11	

The student scores were considered by curriculum and the results were displayed on a line graph for comparison.

In Table 4.19 below these results are shown in table form.

Table 4.19 Non-IB and IB student results

SCORES	NON-IB Students	LEVELS	IB Students	LEVELS
20	1	Low level SRL 1 student	0	Low level SRL 1 student
21	0		0	
22	0		1	
23	0		0	
24	0		0	
25	0		0	
26	0	Mid level SRL 30 students	1	Mid level SRL 35 students
27	0		0	
28	1		1	
29	4		0	
30	2		1	
31	1		1	
32	2		3	
33	1		4	
34	8		8	
35	6		10	
36	5		6	
37	8	High level SRL 186 students	11	High level SRL 151 students
38	11		16	
39	15		19	
40	20		13	
41	18		14	
42	21		17	
43	27		19	
44	23		11	
45	13		14	
46	15		9	
47	5		7	
48	10		1	

The student results were presented showing that 83.5% of students scored in the top quartile as having a high level of self-regulation. There were 63% of students who scored 40 points or more. In this group of high scorers more girls scored 40 points or more than boys. All of the students answered the second question positively, this was the question regarding wanting to learn new things. The data gathered from the student questionnaire was arranged by school, long-term students, gender and IB/ Non- IB.

Teacher data:

The teacher questionnaire results were presented and the results demonstrated a full range of scores across the twenty teachers from 0 to 16. Teachers' results were matched with their student groups for comparison.

The next chapter focuses on the qualitative data: the individual schools' information is provided first and then the chapter moves on to the qualitative data collected from the student questionnaire and the student interviews.

Chapter 5: Qualitative data:

> "I want to understand the world from your point of view. I want to know what you know in the way you know it. I want to understand the meaning of your experience, to walk in your shoes, to feel things as you feel them, to explain things as you explain them."
>
> James P. Spradley p.34 (1979)

Introduction:

In this chapter a brief curricula background of each of the schools is presented and the qualitative data from the student questionnaire and the student interviews are outlined.

5.1: Background to the schools:

In order to answer the research question as to whether the International Baccalaureate's Primary Years Programme (PYP) facilitates students' self-regulatory learning more than other curricula models, an overview with regard to the individual schools' curricula is required. We are also trying to ascertain to what extent different curricula embed the promotion of self-regulated learning and autonomy within them. For this study the schools' websites were examined as well as using information from colleagues through contact with the individual schools. Curricula background, mission statements and information regarding aspects of self-regulated learning were collected. As a further question is the relationship between teachers' approach to student autonomy and the students' autonomy, the teacher questionnaire results are included for comparison. The schools in the study are examined in IB and Non-IB groups.

Table 5.1 Nationalities of students

School	Number of Nationalities
BSD	27
PSUK	1 – All British
NS1	1 – All Nigerian
NS2	1– All Nigerian
NS3	1– All Nigerian
NS4	1– All Nigerian
SA	1- All South African
IBG	22
IBD	31
IBV	6
IBS	21
IBDE	8

The students indicated their nationality on their questionnaire and as can be seen from Table 5.1 above the student sample is a varied group with some schools mono cultural in population and others more international.

5.1.1 IB Schools:

One concept fundamental to self-regulated learning and autonomous learning is the idea of lifelong learning. Lifelong learning is central to the IB Primary Years programme and in fact all the IB programmes. The mission statements of the IB schools all mention lifelong learning or independence in their individual mission statements. One IB school only has the IB general mission on its website and not its own mission. An example of one of the IB schools' specific missions is,

> "We provide a high quality international education, which enables students to become socially responsible citizens, enthusiastic inquirers and lifelong learners in a challenging and nurturing environment."
>
> (School website)

Lifelong learning and independence is linked to self-regulated learning through a skills focused inquiry curriculum that provides students with the competencies to become independent learners. As referenced on page twelve the IB mission includes the phrase "lifelong learning" as it is a core philosophy for the programme which is supported by extensive training and professional development for teachers and administrators. The Primary Years Programme (PYP) includes a set of twelve attitudes for the students to exhibit, which are encouraged by the teachers; one of these attitudes is independence.

> "Thinking and acting independently, making their own judgements based on reasoned argument, and being able to defend their judgements."
> ("Making the PYP Happen" IB document p.24 Fig.9)

These Learner Profile attributes also incorporate reflection as one of the important facets of an internationally minded learner. Reflective practices are referenced in the outside layer of Boerkaert's model (1999). A reflective student is seen as someone who gives,

> "Thoughtful consideration to their own learning and experience. They are able to assess and understand their strengths and limitations in order to support their learning and personal development."
> ("Making the PYP Happen" IB document)

In fact the Learner Profile attributes are part of every IB document their descriptors are included at the front of each IB publication. The PYP has students actively engaged with the planning of their learning as well as being involved with assessing their own learning. These practices support the student in an annual student-led conference where the student demonstrates their independence and self-regulation development by talking about and demonstrating what they have learnt to their parents. Students also take part in a goal setting exercise as part of a three-way conference earlier in the academic year where the teacher, parents and student meet to discuss the student's strengths and areas for improvement. In the PYP curriculum the students are required to reflect on and take responsibility for their learning through the units of inquiries undertaken by their class. This would involve the students having input into the unit through lines of inquiry that they were particularly interested in. The units often involve a variety of choices of assessment format and students can also co-construct assessment rubrics and take responsibility

for their own assessments. An element of each unit is student action which must be student directed and could range from bringing in materials to fund raising because of the subject of the unit. The PYP programme details emphasises the central tenet of self-regulation stating that,

> " Students are supported in their struggle for mastery and control on their journey to become independent, autonomous learners."
> (Making the PYP Happen 2009 p.7)

This statement also highlights the teacher's supporting role in this programme and places the responsibility for learning with the individual student.

As was shown in the previous chapter, in the teacher questionnaire results from the IB schools the majority of the teachers were moderately or highly autonomy supportive and one teacher was moderately controlling.

5.1.2 Non-IB Schools:

Some of the Non- IB schools also include aspects of self-regulated, independent learning or lifelong learning in their school curriculum.

The Montessori school (NS1) stated that,

> "The Montessori approach adopted inevitably allows for independent learning"
> (NS1 School)

The Montessori programme is child-centred and based on the independence of the student. The teacher from the class surveyed in this school scored as highly autonomy supportive on the teacher questionnaire. The stance of the teacher is vital in supporting self-regulated learning.

The Nigerian school (NS2) talks of “interactive lessons” where,

> “Pupils are made to participate.”
>
> (School information NS2)

This is an interesting statement, as interactive lessons would indicate participation on the part of the student. These lessons however may not necessarily facilitate independence for the students. The “power of praise”, it is stated is used in the school. The teacher for this class scored as highly controlling on the teacher questionnaire. The notion of forcing participation is very counter to self-regulation and autonomous learning.

The Christian centred Nigerian School (NS3) stated that they encouraged independent learning but there are also regular national tests.

> “The pupils have been trained to work independently but are to signify when they need help.”
>
> (School information NS3)

The teacher of this class was the highest controlling teacher with a score of zero on the teacher questionnaire. Is more control required, when there are national requirements for tests?

In the fourth Nigerian school there is a blend of the International Primary Curriculum (IPC- Cambridge system) as well as the Nigerian national curriculum and the students take the national assessment tests. The IPC curriculum documents state that students,

> "Engage in and take ownership of their learning and become more aware of themselves as learners and the way they learn."
> (International Primary Curriculum, http://www.greatlearning.com/ipc/)

The teacher of this group scored in the middle of the continuum and is therefore a moderately autonomy supportive teacher.

The teacher in the PSUK school, which is a UK National Curriculum school, scored as a highly autonomy supportive teacher. The school describes their curriculum,

> "Our curriculum has been designed to allow children to investigate, explore and develop a love of learning in order to reach their full potential."
> (School information PSUK)

In this school parents are requested to support the students' independence. As of 2012 there was SATS testing at seven and eleven years of age.

The Dubai British Curriculum School also uses the IPC curriculum in the Primary Years for science and social studies topic teaching as well as the UK National curriculum for the core subjects. Self-regulated learning is not specifically referenced although the Principal states,

> "What really matters is not gaining qualifications for their own sake but learning – always being open to personal growth, having a mindset that welcomes and tackles problems, being resilient when times get tough."
> (BSD School information)

Regular assessments and UK National curriculum SATS are also given. Three of the teachers of the ten and eleven year olds at this school scored in the lower half of the score distribution (See Figure 4.3 Number line –Teachers' Scores) One teacher was highly controlling, two scored as moderately controlling and one highly autonomy supportive.

The South African school in the study uses the South African national curriculum and students are encouraged to "develop a passion for learning." There is not a great deal of detail available with regard to this school. According to documentation online in the South African curriculum there are formal and school assessments through the year and an end of year assessment. These are,

> "A compulsory component for progression and promotion in all the different school phases." (2012 p.6 Department of Basic Education)

The South African schoolteacher scored as MA in the teacher questionnaire.

5.2: The Student Questionnaire:

On the student questionnaire as well as the twelve questions discussed in the previous section, two open-ended sentence starters were also included, these were "Learning is…" and, "I would like to know more about…" It was interesting to read the responses of the students to discover their opinions and thoughts regarding how they view learning.

In answer to the first sentence starter there was a variety of types of responses from definitions to opinions as well as statements, which related to the process of learning as well as the product. These will be examined in more detail later in this chapter. The second sentence starter generated a variety of curricula based responses, some broad subject areas like Mathematics, or Science. Other responses were more specific topics within subjects or units such as fractions, algebra and advertising. The responses to both sentence starters were recorded in chart form and colour-coded by category. These categories were constructed by colour-coding the student responses as to the focus of their statement.

Table 5.2 Creating categories from the sentence starter responses

to find **information** about something new and keep that **knowledge** forever
good for you because it **helps** you a lot
exploring new things in a **fun** way
educative and to know about what you have seen learning is also being an achiever because when you learn you will **know** much better
very **fun** and exciting
learning you **improve** and **know** more
good for the **future** and for me it is very **important**
fun because I learn **new** words that I don't know
find out how to do something even if you don't like it

KEY: Pink: learning experience- processes GREY: outcomes of education
GREEN: Learning seen as fun/exciting YELLOW: personal motivation

The key words from the first sentence starter were identified (e.g. bolded words in Table 5.2) and used to create a variety of tag crowds. (Examples are found in Appendix F and in Figure 5.1 below).

In these word clouds, the frequency of this qualitative data is represented by the proportional size of the key words. The more the same key word is entered the larger that word will be so that a visual representation of the students' responses is created. Examining the tag crowd of all the answers to the first sentence starter "Learning is…"the largest words are: fun, future, exciting, important, interesting, job, knowledge, hard and boring.

Figure 5.1 Tag Crowd: Sentence Starter 1: Learning is… All responses

Other words that were also used reasonably frequently were collaborative, discovery, understanding, strategies and improvement. Interestingly some of the less

used terms were tests, textbook, memorizing and independent. These tag crowd terms are used for thematic analysis later. The second question generated a list of school subjects and comments, which ranged from favourite curriculum areas to specific areas of learning. The largest answers were: mathematics, science and history. Charts of these statements are to be found in Appendix A.

In this section the first sentence starter "Learning is…" will be the focus for discussion. The research question for this study relates to students' motivation and this open-ended sentence starter elicited a variety of responses, which highlight students' interest in their learning, including comments relating to their motivation for learning and their thoughts on teaching. These responses were also subjected to a phenomenographical iterative process of sorting to identify the main themes that emerge. I performed the first organisation of the students' responses and after categorising the individual statements there were three clusters. A colleague also categorised the statements and after comparison of our thematic clusters it was apparent that she had selected themes that were fairly similar to my own. (See Table 5.2 below)

Table 5.2 Classification of themes "Learning is…"

My clusters	My colleagues clusters	Final foci
Descriptions of the learning experience - processes	Use of concrete verbs to express learning- completed definition	Learning experience
The outcomes of education- why learn	Putting a value on learning/ the purpose	Outcomes of education
Expressions relating to students' motivation	Ways of describing learning -positive	Student motivation
	Negative opinion - based answers	Student motivation

The area of student motivation relates to the research question regarding students' interest in learning to be self-regulated students. The positive and negative comments relating to the learning experience can be related to the schools' curriculum and/or the teacher's autonomy support.

When looking at the IB and Non-IB answers to the first sentence starter "Learning is…" out of the four hundred and four respondents there were only thirty-two negative comments (8%) and of those only nine (2.2%) were from IB students. These nine negative comments were all from two of the five IB schools whose teacher questionnaire results indicated either in the low moderately autonomy supportive or the moderately controlling results. The comments ranged from feeling that learning is "tedious but important", to a statement which alludes to the teacher's stance.

> "Learning is sometime not and sometimes fun because I don't like someone talking five hours."
>
> (IBGS4)

Please note that student quotes referenced are identified by school abbreviation (Table 4.1), number of class (if the student questionnaire had been grouped by separate classes) as well as an individual student number (S).

Another IB student agreed with the importance of the way you learn. This could relate to the curriculum or the teaching style:

> "Learning is fun but also boring depending on what you are learning and how."
>
> (IBGS12)

A student from one of the UK curriculum schools commented on the method of learning:

> "Learning is a bit fun but it needs to be more hands on sort of stuff instead of text book stuff."
>
> (BSDS20)

The choice of teaching approach needs to be engaging to the learner and textbook based activities are not always as exciting to all students, practical learning opportunities are often more motivating in encouraging students to want to learn.

In comparison to the IB programme, which incorporates a range of assessments, one Non-IB student completed the first sentence starter with an answer that indicated how test driven the curriculum is in their school.

> "Learning is something you learn to take a test."
>
> (SASS03)

As outlined previously, the curricula backgrounds of some of the Non-IB schools involve regular national tests and exams.

When examining the word clouds (Tag Crowd) separately created from the IB and Non-IB responses to the first sentence starter "Learning is…" it is interesting to note that fun is largest word in both groups, yet the word boring is significantly larger in the Non-IB Tag Crowd. (See the Tag Crowds of the Non-IB student responses and the IB student responses in Appendix F1 and F2) The Non-IB students' comments also included horrible, dull, memorising and tests. The word cloud of the IB students included strategies, which is not a term that was incorporated in the Non-IB

students' word cloud. Strategies are part of the self-regulatory processes detailed by Boerkaerts (1999), Zimmermann (2002), De Jäger, Jansen and Reezigt (2004) and Hattie (2012). This area is also part of the IB programme. Scaffolding through teaching of strategies is the cornerstone of the PYP curriculum, which through its inquiry based programme, highlights individual discovery and problem solving and supports self-regulated learning. These are areas that are not emphasised as much in the Non- IB schools curricula information. In the Non-IB student word cloud the word facts is larger and included tests, remembering and SATS. None of these terms are in the IB word cloud. In the Non-IB schools there is more emphasis on tests generally, which is not a focus in the IB curriculum. The IB students are encouraged to be more individually reflective. Teachers, with student input, create a range of assessments, to gauge the students' understanding of the concepts taught.

From the word clouds in general more IB students view learning as a positive experience and the inclusion by a number of students of the terms strategies in relation to learning, relates to the students learning to become more self-regulated. The pedagogy of the IB programme involves teachers constructing their own inquiry units involving student input through questioning and independent choices with regard to assessment and these learning experiences can be generally more motivating for students.

In this following section the qualitative data relating to the research questions will be presented. When examining the qualitative data to find out if the International Baccalaureate's Primary Years Programme develops students' self-regulatory

learning more than other curricula models, comparisons will be drawn across the schools focusing primarily on the IB / Non-IB differences. The statements made in response to the first sentence starter will be presented in order to compare the students' curricular backgrounds. These will be considered across all the respondents and then the student results from those students who had been at their present schools for seven years or more will be presented for comparison.
The responses to the first open-ended question "Learning is…" were analysed as to whether they were process or product related. These responses were considered as to whether more IB students made process or product related statements.

Process related statements related to the way students learn whereas the product related statements were more focused on the purpose for learning in the students' future. Comparing IB and Non-IB students' responses there were more process statements from IB students, which referenced aspects of the PYP programme such as skills, strategies and concepts. The Non- IB students' comments were more product orientated in general. There tended to be more process related statements from students whose teachers were autonomy supportive according to the teacher questionnaire.

5.2.1 Statements from IB students in response to the sentence starter "Learning is…"

An analysis of the conceptual clusters that emerged from the "Learning is…." sentence starter indicated three cluster foci from the students, namely:
Cluster 1: concerning the learning experience

Cluster 2: the outcomes of education

Cluster 3: aspects of student motivation

A number of the students made references to learning strategies and skills, which are processes that feature in the IB curriculum (Cluster 1). In the Primary Years students are taught strategies and skills in various curriculum subjects. Different ways to work out Mathematics computation, or word attack strategies for unknown words when reading for example are specifically taught to students. Transdisciplinary skills of communication, thinking, research, self-management and social skills are also taught across the curriculum.

> "Learning is exciting and it can help when we are stuck on something so we use strategies to help us." (IBS2S5)

> "Learning is joy and a great opportunity in my perspective. Learning new skills and strategies is a very important part of learning and I feel I do it." (IBD1S4)

In the PYP units of inquiry students examine the personal relevance of each unit theme and authentic real life connections are developed.

> "Learning is about going deeper in the topic, thinking how it functions, how it's made and what it does to help us." (IBS2S7)

The teacher's role in the process of learning in an IB school is developed through regular professional development. Through creating their own units of inquiry teachers have the opportunity to make their classes enjoyable and stimulating for students. The teaching of strategies leads to the students developing more autonomy, which supports the IB mission of encouraging lifelong learning.

> "Learning is when your teacher teaches you other things you don't know and finding good strategies to do your work better." (IBGS66)

The IB programmes have a set of Learner Profile attributes, which all the programmes emphasise through their units. One of these is being an inquirer, discovering more about a particular subject. Another Learner Profile attribute is being a risk-taker, trying new activities. The collaborative nature of the curriculum is also referenced. Some of the students' responses reflected these attributes as part of the process of learning.

> "Learning is a kind of discovering that helps us convert our discovery into new information." (IBGS41)

> "Learning is about being a risk taker and having fun and learning to work in a group." (IBVS6)

5.2.2.Statements from Non-IB students in response to the sentence starter "Learning is…".

An analysis of the conceptual clusters that emerged from the "Learning is…." sentence starter indicated three cluster foci from the students, namely:

Cluster 1: concerning the learning experience

Cluster 2: the outcomes of learning

Cluster 3: aspects of student motivation

In the Non-IB students' responses more focus was given to Cluster 2: the outcomes of learning. Learning was seen as important and related to obtaining employment

when you left school as well as preparing you for the responsibility of adulthood and having a family.

> "Learning is what helps you improve your knowledge of subjects and to let you get a good job when you are older." (BSDS109)

> "Learning is very important and is a life ability it may not be fun but it is important." (PSUKS30)

> "Learning is a good thing it makes you be responsible for your future and makes you teach your children." (NS1S8)

The methods of teaching were also commented on and statements mentioned opinions relating to the way lessons were conducted. (Cluster 1)

> "Learning is sometimes fun but mainly copying from the board." (BSDS112)

The effect of the teacher is also referenced with statements regarding the length of time taken to teach a particular concept or lesson. The last response is a sentence that makes the process of learning sound easy.

> "Learning is fun but quite boring when the teacher takes a long time to teach you it." (PSUKS12)

> "Learning is when someone teaches the students and they understand." (NS2S7)

In order to discover more with regard to the relationship between teachers' approach to student autonomy and the students' autonomy, the highly autonomy supportive (HA) teachers' results on the PS questionnaire were matched with their students' comments with regard to the first sentence starter, "Learning is…"

In the IB schools the HA teachers' students comments often referred to aspects of the PYP programme. In their statements the students referenced the following aspects: group work, discovery (inquiry), learning strategies and their teachers' style of teaching.

> "Learning is when you get new strategies and you get better at things." (IBD1S15)
> "Learning is a kind of discovering that helps us convert our discovery into new information." (IBGS41)
>
> "Learning is fun when you get educated in an interactive way." (IBGS17)
>
> (IB students' questionnaires)

In the Non-IB schools the HA teachers' students also referenced their teachers' pedagogy and demonstrated their motivation for learning.

> "Learning is like not really exciting and not hard but learning should be fun that is how we learn better." (BSDS6)
>
> "Learning is very interesting for me depending on the way my teacher teaches me because sometimes I don't pay attention to him." (NS1S4)
>
> "Learning is discovering new methods and ways to do something". (BSDS71)
>
> (Non-IB students' questionnaires)

Looking at selected responses from high scoring students from the individual schools it is interesting to consider the elements of self-regulated learning the students mention in the statements.

The UK curriculum school in the UAE had seven high scorers and three students mentioned learning as helping in the future, which could relate to the idea of lifelong learning, though often the comments related more to an end result usually

employment. The UK pilot school had nine top scorers and most of the comments were positive in relation to learning and two mentioned the future. One related learning to passing exams and gaining employment.

> "Learning is very good because you get good papers and you will get a good job".
>
> (PSUKS1)

NS2 had ten top scorers and the majority of the comments related learning to knowing more. NS3's four top scorers were not very descriptive, mainly saying that learning was "fun". NS4's three top scorers all saw learning as gaining knowledge.

> " Learning is knowledge that you get from reading and studying" (NS4S7)

The South African school had five high scorers who simply expressed what learning was. For example,

> "Learning is when you learn of something." (SASS16)

In the IB schools in general there were more comments about learning which related to the essential aspects of self-regulated learners that Zimmerman (2002) charted. Learning skills and strategies, were mentioned by one of the sixteen high scoring IB students in the UAE,

> "Learning new skills and strategies is a very important part of learning and I feel I do it." (IBD1S4)

Goal setting is another aspect of self-regulated learning built into the IB's PYP programme.

> "Learning is something people do every minute of their life to achieve goals."
>
> (IBD1S21)

One of the ten high scorers from the IB school in Germany also referenced the concept based learning of the PYP in their statement,

> "Learning is very fun and affectful teachers try to make learning fun to understand the concept." (IBGS18)

The importance of the teacher and their stance as to whether they were autonomy supportive or controlling was explored by Flink, Boggiano and Barnett (1990). Darby (2005) also referenced teachers and their passion for their subject being a determining factor in student engagement and motivation.

5.2.3. Comparing statements from IB and Non- IB students

Looking at the comments made by all the students, not just those who scored highly, we can compare the IB and Non- IB schools.

IB

The IB schools are all teaching the International Baccalaureate's Primary Years Programme (PYP). The schools vary in the length of time they have been in existence. Some of the schools have been authorized to teach the programme for many years and others are candidate schools in the first or second year of teaching the PYP.

In the PYP students are not given grades as year groups have expectations that they work towards. Students are expected to meet expectations by the end of the year.

Some students will still be working towards a number of these expectations and a number of students will exceed expectations in various areas of the curriculum or in behavioural expectations.

> "Learning is very nice and fun when I work with others and I can work towards exceeding expectations." (IBD1S5)

A number of the IB students included aspects of self-regulation in their statements. Finding out about yourself helps you to develop independence as a learner. Confidence and commitment are two of the ten PYP attitudes, which help develop the Learner Profile attributes. The concept of discovery relates to the inquiry- based curriculum of the PYP.

> "Learning is a way to express your feelings through data and writing. By learning new things you discover yourself." (IBD2S3)

> " Learning is a key to my future that helps me do anything in the world with confidence and commitment." (IBD2S12)

The PYP emphasizes group work in its social skills and Personal, Social and Health Education scope and sequence. Collaborating with others is encouraged for students and staff alike.

> **"**Learning is fun when you work in groups so you can work with others and if you don't know something you can just ask the group." (IBDES1)

> "Learning is sometimes fun when we do work in a team and projects together in a team." (IBS1S10)

As mentioned previously the IB mission encourages lifelong learning.

"Learning is something you do your whole life long it makes you smart and helps you your whole life." (IBVS2)

Non-IB

The first sets of statements are from a UK National curriculum school in Dubai. There are SATs and regular testing at this school.

"Learning is memorising facts and improving" (BSDS52)

"Learning is sometimes interesting not always, I like learning in different ways like doing things to help myself." (BSDS94)

"Learning is fun because you get to do new things learn how to do things (like hard questions) and your learning helps you think of your future." (BSDS130)

The statement below is from the pilot UK curriculum school.

"Learning is quite hard but worth it because you have to get a comfortable job when you are older." (PSUKS16)

The three comments below are from the Nigerian schools. (Cluster 1)

"Learning is when someone teaches you something and you know and practice things you don't know by reading." (NS1S6)

"Learning is when someone teaches the students and they understand." (NS2S7)

"Learning is the process of gaining knowledge and experience." (NS4S6)

The South African school has a test-based curriculum and this was apparent in some of the statements made by the students in the questionnaire.

"Learning is something that you learn to write a test." (SASS2)

Long-term students and high scorers

In analysing the responses to the first open-ended question the students were sorted in order to examine the answers from the high scoring students. For the purpose of this comparison the high scoring students were deemed as those students who scored 40 points or above on the student questionnaire. As a comparison between IB and Non-IB students is necessary in order to answer the research question the selected statements are divided into the two categories. The percentage of these long-term students in each school is also stated. As mentioned previously it is possible that having been within the same curricula background for the majority of their primary years these students would be more immersed in their school culture and be therefore a more representative sample.

Table 5.3 Over seven years in school-students' endings to the sentence starter "Learning is…."

NON-IB			IB		
SCHOOL	**% 7 yrs**	**Learning is…**	**SCHOOL**	**% 7 yrs**	**Learning is…**
BSD	11%	Out of 15 comments- 3 mentioned "boring"	IBD	20%	"Something people do every minute of their life to achieve goals. Find out more things to answer questions"
		"New and exciting because of all the interesting and new facts we learn"			"To be curious to find out about what interests you"
PSUK	71%	"You get good papers and you will get a good job"	IBG	14%	"Understanding new concepts and learning how to use them"
		Out of 22 comments 4 mentioned "boring"			"Fun because you improve and can achieve a lot of things in life"
NS1	38%	"A good thing it makes you be responsible for your future and makes you teach your children"	IBS	9%	"Learning is fun and exciting because I get to learn new stuff that I never knew before and it is fun because I want to be a lawyer when I grow up. That's why I want to learn new stuff."
NS3	83%	"the act of getting to know more things"			
NS4	38%	"getting to know new things by reading or being taught it is also the process of getting knowledge from a piece of information"			

The highest percentages of long-term students in Non-IB schools were from NS3 and PSUK. Both of these schools are National schools and single nationality. The highest percentage of long-term students in the IB schools surveyed was from the IB school in Dubai. Of course the premise of the IB schools around the world is to allow students to continue their IB education wherever their parents' work might take them so it would be likely that there are less students staying for a longer period.

The Non-IB comments were concerned more with the gaining of knowledge and facts. As previously shown the Non-IB students statements regarding learning were more product focused particularly on learning for their future life. The IB students referenced goal setting and the learning of concepts, both elements from the IB curriculum. A number of IB students also saw learning as relating to their adult life and employment.

5.3. Student Interviews:

A series of short follow up interviews were conducted with 10 ten and eleven year olds at one of the IB schools in the survey. The interviewees were identified as IS1-IS10. The students were asked to read four statements regarding how they learned best. They commented on each one and discussed aspects of learning and teaching. The student then suggested a statement about learning that they believed was how they learned best. The interviews were recorded and transcripts written. The responses of the students interviewed were initially sorted by the categories of the individual statements as they related to the students' learning. These quotes were

then analysed for content. Statements relating to the way students learn, their ideas relating to independent learning and teacher stance were the principal categories identified. The focus for these interviews was to see how student motivation related to the ways students learn and the role of the teacher.

Statement 1: Students learn easily when their brains are ready

Students interviewed differed in their opinion of this first statement. Two students thought that starter questions in Maths would help start your brain one student believed that our brains are always ready.

Statement 2: Students learn when they're given the chance to experiment and use equipment

All of the students interviewed agreed that hands-on practical lessons helped them to understand more. Individuals referenced science, music and mathematics as subject areas where this type of learning deepened their understanding.

Statement 3: Students learn when they start to think about what other people are saying

The students discussed group work and how they felt that they learnt from each other in collaborative tasks.

Statement 4: Students learn when teachers stand in front of the class and tell them things

All the students believed that they learn when they are given clear explanations. Some expressed the view that they would not like to have a lesson with teacher talk

dominating the majority of the time. One student replied that he would not mind that as long as the teacher's talk was interesting with visuals and short video clips.

Samples of the students' suggestions:

> "Students learn when they explore the topic themselves and when we can connect information with something." (IS7)

The students interviewed enjoyed working together after an initial input from the teacher. They generally felt that they learnt from each other. One student preferred paired work rather than large groups.

> "Students learn when they explore and investigate the unit in a fun way while understanding what the teacher is talking about." (IS8)

The notion of learning as a fun experience links to motivation and development of independent self regulated learning. Several of the students interviewed talked of needing time on their own to think.

> "Students learn when they are alone." (IS2)

The student interviews were analysed by coding the statements made. Three themes emerged: independent learning, different ways of learning and the stance of the teacher.

The students expressed their interest in working on their own and finding out about a topic for themselves or discovering more about themselves. This relates to the

centre of Boerkaert's model (1999) when the student is learning about themselves and how to learn.

> "It's just like you're unlocking something in yourself, and without people telling you what to do or friends giving ideas and then you have to do that idea. You're unlocking something you're unlocking yourself and learn more about yourself" (IS2)

One of the student's suggestions for a statement about learning was:

> "Students learn better when they are not forced to learn it one way." (IS1)

This student explained that she liked that her teacher had taught them various strategies for subtraction and that they were given the option to select the best method for them or the most appropriate for the question. There was a great deal of discussion in the Mathematics class and students' opinions were a large part of the conversations. The teaching of strategies and skills supports the development of self-regulation and autonomy as a learner for the students. As one of the students stated understanding what you are doing is key:

> "I would like to use my own strategies- what if I don't understand their strategy." (IS6)

Another self-regulatory practice is reflection, which is an important facet of the International Baccalaureate's PYP programme. As the student says this can be an individual independent practice at times.

> "Yes sometimes you do need that time alone to reflect as you can't copy off someone, it's your reflection. (IS9)

Here, a student's reflection on learning highlights the development of autonomy. He sees learning as happening when students consider a topic deeply, thinking it out for themselves. He also understands that someone telling you a fact is not always the same as really knowing it.

> "When only the teachers tell you it doesn't necessarily mean you know it. You figure out things yourself that there is a deeper thing." (IS7)

Different ways of learning also emerged as a theme in the students' discussions of the ways in which they learn best.

> "He brought in 3D shapes so we could count the edges and vertices and most people got it that way we didn't get it on the board- just showing it." (IS1)

Here the student is explaining how their teacher (HA on the PS teacher questionnaire) supported the students' understanding of 3D shapes through a practical learning opportunity with real objects. The students appreciate the hands-on, experiential approach, as a more effective learning experience.

> "When we get to actually do things we learn better because we were trying it out instead of just listening to the person trying it out." (IS4)

An independent, self-regulated learner who reflects on his or her learning will also learn from mistakes. In an inquiry based programme teachers support the students in their inquiries by allowing them to struggle at times, to make mistakes and to learn from these and to set themselves goals based on their work.

> "You can share knowledge through yours and other people's mistakes. So if you make a mistake you know what you need to improve next time. You can learn from other people's information, you are sharing the knowledge."
>
> (IS10)

The teacher's approach to student self-regulation and the development of autonomy is crucially important. The students' motivation depends in a large part to the way the teacher interacts with them. If the teacher is passionate about the lesson and his or her teaching, the students' motivation will be higher.

As one of the students said:

> "They (students) are willing to learn new things because of the teachers." (IS4)

One of the statements made was that students learn when the teacher stands in front of the class and talks. One of the students explained how he learns and his comment also highlights the teacher's role in differentiating instruction for learners.

> "Because when you are talking about a presentation you'll learn when he's basically pointing and telling you about the facts. But then the teacher would come round to you and tell you- this is how you do this-and then that will help because not everyone is at the same level."
>
> (IS9)

The students' own suggestions for how they believe they learn best were varied, one really summed up the PYP approach.

> "Students learn when they explore and investigate the unit in a fun way while understanding what the teacher is talking about."
>
> (IS8)

The teacher's role is to introduce the topic and then to plan for enjoyable ways for the students to interact with the theme so they will deepen their understanding. The

phrase “explore and investigate” is a good one as it encapsulates the heart of the IB inquiry based curriculum.

5.4 Summary

In this section the schools’ backgrounds were briefly presented including the student nationalities. The data was considered in IB and Non-IB groups for comparison and the comments of long-term students and high scorers were also outlined. The data responses from the first sentence from the student questionnaire, "Learning is..." were presented and the themes from the statements made in response to the first sentence starter were determined. The student interviews with ten students from one of the IB schools in the study were presented.

The next chapter discusses the quantitative and qualitative data through consideration of the research questions.

CHAPTER 6: Discussion of results

"The goal is to turn data into information, and information into insight."

Carly Fiorina, former CEO HP
Speech at Oracle Open World, San Francisco. 2004

Introduction

The key focus of this thesis is student motivation toward self-regulatory learning and it centres on comparing the International Baccalaureate's (IB) Primary Years Programme (PYP) to other curricula models. The four research questions that form the basis of this study are considered in the following sections with regard to the patterns, connections and interpretations that can be drawn from those data presented in chapters 4 and 5.

6.1 Does the International Baccalaureate's Primary Years Programme facilitate self-regulated learning in students?

This study begins with the question above. The discussion that follows, attempts to answer this question. In the study, students scoring in the top quartile of the range (i.e. a score of between 37-48 points) were considered as self-regulated learners. Out of 187 IB students surveyed there were 159 students who scored 37 points or more. In the Non-IB group there were 193 out of 217 students in the top quartile. From the total self-regulated learning scores from the results of the student questionnaires received from the IB schools in the study, students at ten and eleven years old appear to have developed various self-regulatory practices. The results from the quantitative data demonstrate this and statements made by IB PYP students in the qualitative sentence starter completion, as well as in the student interviews, corroborate this view.

The IB PYP programme offers a supportive structure for self-regulated learning in its curriculum framework and, as the organisation states on its website,

> "The PYP prepares students to become active, caring, lifelong learners who demonstrate respect for themselves and others and have the capacity to participate in the world around them. It focuses on the development of the whole child as an inquirer, both within and beyond the classroom."
>
> (www.ibo.org)

The PYP is a holistic, inquiry-led programme that aims to develop lifelong learners (as does the general IB mission statement referenced in Chapter 1).

The International Baccalaureate's documentation for delivering the PYP ("Making

the PYP Happen") details the self-regulatory practices, which are part of everyday life in an IB school. The PYP Attitudes include independence and the Learner Profile attributes cite reflection as a key element. Students are involved in planning independent inquiries, especially in the last year of the programme where the students demonstrate their understanding of one of the units in an exhibition unit. The direction of their own learning is part of the middle layer of Boerkaert's model (1999) and demonstrates the students' growing independence. This exhibition is a culmination of the primary years and a celebration of the journey each student has taken in the PYP. The PYP students have portfolios of work celebrating their learning journeys. Portfolios are referred to by Paris and Paris (2001) as ways for the students to assess themselves and to put their reflective skills in action. These portfolios are used in an annual student-led conference in which the student shares their learning with their family in their mother tongue. This conference and an earlier three-way conference between the student, parents and the teacher also include a goal setting component. The PYP teacher supports and scaffolds the students' learning with skill and strategy teaching related to the unit and the core subjects. A significant component is action in which the student is encouraged to take some student initiated action related to the unit. This could be small and individual or may involve a group of students or the whole class. The PYP programme aims to support students in becoming more responsible for their own learning and encourages students to be more self-regulated and autonomous self-motivated learners. However, any educational programme relies upon its teachers and this requires the documentation and the IB training being put into practice by the leadership and staff. On-going professional development has to be completed by all IB schools as

part of the IB organisation's quality assurance. After becoming authorised to teach the programme, schools are visited on a five-year cycle of evaluation ensuring that the IB standards and practices are maintained.

Being a PYP teacher and working with an inquiry programme takes time for teachers to adjust, especially when they have been trained in another system. Having worked with teachers new to the PYP and having been a new PYP teacher once myself I know that this is a mind shift in the way teaching and learning is viewed, and that teachers can take years to really get to grips with all the aspects involved in delivering the programme. In order to address this question qualitative data from the IB students in the student questionnaire is drawn upon as well as relevant statements from the student interviews regarding learning within the IB's PYP curriculum. Schunk and Zimmermann (1997) linked motivation to self-regulated learning and explored how autonomy development leads to more intrinsic motivation. Motivation towards learning for oneself and examples of self-regulatory learning was evident in the positive statements made IB PYP students in the student questionnaire sentence starters and from the follow-up interviews with students at the end of the PYP in one of the IB schools in the survey.

In analysing the statements made by the students when completing the first sentence starter "Learning is…" the statements were sorted into IB and Non-IB students and then categorised further as to whether they related to the process of learning or were more product orientated and referred to the future outcomes of learning. The IB students tended to focus more on the process of learning whereas

there were more product- driven statements made by the Non- IB students. The Non-IB students' comments focus more on the outcomes of learning i.e. getting knowledge or to gain employment in the future. IB PYP students referenced aspects of the PYP curriculum such as concepts, skills and strategies.

> "Understanding new concepts and learning how to use them"
>
> (IBGS71)

> "Learning is joy and a great opportunity in my perspective. Learning new skills and strategies is a very important part of learning and I feel I do it."
>
> (IBD1S4)

(IB students' responses to student questionnaire sentence starter)

In the interviews conducted with ten students at one of the IB schools in the study, students discussed their learning and their thoughts on how they learned best. Elements of the PYP, which reinforce self-regulated learning, were included in their ideas and thoughts about education. The students talked about strategies particularly with relation to mathematics and the practice of reflection was also commented on. Hattie (2012) highlighted that self-regulated learning is most effective when taught through content domains, teaching strategies for computation for example. Having students talk through their understanding, verbalising their thought processes is also autonomy supportive (Schunk 1999).

> "I would like to use my own strategies- what if I don't understand their strategy."
>
> (IS6)

> "Yes sometimes you do need that time alone to reflect as you can't copy off someone, it's your reflection."
>
> (IS9)

Here the student acknowledges that reflection is usually a personal strategy. One student also talked about learning through mistakes and another discussed hands-on learning and how they felt that they learned more effectively by trying things out. A general comment from the interviews was that the students were comfortable discussing their learning. The students interviewed were confident speakers and having the opportunity to both discover more about their learning and the context of their school was valuable to this study and, in my opinion a direction for future research. It was not possible in the context of this study to interview all the students. The IB's PYP can develop self-regulated learning in students because the elements of self-regulation are embedded in the philosophy and pedagogy of the programme. This study included other curricula models to discover if they also have self-regulatory practices embedded within their framework and practices. The second research question considers how the PYP compares with other these curriculum models.

6.2 Does the International Baccalaureate's Primary Years Programme develop students' self-regulatory learning more than other curricula models?

The data from the self-regulated learning inventories indicates that the students who participated in this study demonstrated a high level of self-regulation with 83.5% of all students scoring 37 points or above out of a possible 48 points on the student questionnaire regardless of their curricula background. This would mean that out of the total students in the study only sixty-six students scored below 37 points. Further examination of the student questionnaire results showed that 63% of all students scored highly, scoring 40 points or more. Of this high scoring group there

were more girls who scored highly than boys. In the results from the student questionnaire 100% of the students answered positively with regard to the question about wanting to learn new things and 98% of students indicated that they were happy when they do well at school. If we consider the quantitative results together with the qualitative sentence completion, particularly “Learning is…” as well as the student interviews there is a general shift towards self-regulation in the students studied. These results would indicate that all students irrespective of school type are moving towards developing self-regulation.

Looking at all the students in the survey there were some interesting patterns in the answers to the questions on the student questionnaire. In the answers to the twelve questions there were three questions, which seemed to polarise the students. These three questions also elicited the highest proportion of negative answers. These three questions were: the first question which related to the enjoyment of homework; the fourth question regarding liking hard questions in class; and, the eighth question about the setting of learning goals. With regard to gender there was a similar polarisation in the results received in the student questionnaire inventories. For more details concerning these three questions, please refer back to Table 4.15 (p.112) in the quantitative data chapter.

When we look at the students who have been in their present school for seven years or more 91% of these students scored 37 points or higher on the student questionnaire. Is this indicative of the development of self-regulation as relating to curriculum exposure over time or the teaching? As in many of the findings that will

be discussed in this chapter more information is required to fully analyse the variables, which may impact on a student's development as a self-regulated autonomous learner.

The students aged ten and eleven years old showed high levels of self-regulated learning irrespective of school background, there are some differences that exist but overall they score highly. In order to address the research question regarding curricula differences from the data collected it will be necessary to consider aspects from all of the data. The IB's PYP does include the elements required to support self-regulated, autonomous learners. However the quantitative data from the student questionnaire show that students from other curriculum schools also have developed self-regulatory practices. From the student interviews at an IB school it is apparent that students are reflective about their learning and are becoming self-regulated through the philosophy and pedagogy of the IB's PYP.

An interesting pattern of answers in the student questionnaire emerged when the results were organised by IB and Non-IB responses. More IB students answered Sort Of True than Very True in eleven out of the twelve questions. In all the twelve questions more Non-IB students answered very true than IB students. This could relate to the nature of the IB programme where one of the key attributes of the Learner Profile is being reflective. Self-reflection is also embedded in the curriculum framework and part of practice in every unit and IB students may be more self-reflective and self-aware because of this and might therefore select Sort of True rather than be more extreme and choose Very True in their answers.

The question where more IB students answered Very True was the question, which related to the enjoyment of homework. This highlights the nature of homework in an IB school where the tasks given are often related to the unit being studied and students are usually set tasks related to their individual research. As there is an element of choice for the student with regard to the aspect of the unit that they are focusing on, students may be more motivated to complete their homework. McCombs and Marzano (2012) looked at student motivation and their "will" to learn. In Boerkaert's model (1999) the teacher role is not outlined but it is clearly as large factor in the development of self-regulated learners. In other curricula, for example the UK National curriculum, homework is linked more to topics the students have been working on in class but the element of choice is missing.

Probing the results further and examining the individual questions of the student questionnaire also yielded some interesting information. Often the negative responses either Not Very True or Not at all True highlighted some different aspects of the Non-IB curriculum schools. For example, in the question related to thinking about schoolwork in relation to improving in the future, more than double the number of Non-IB students responded Not at all True than IB students. An important part of self-regulation is the element of self-reflection and being able to assess your progress with regard to your learning and identify goals for continuing improvement. Autonomy supportive teachers scaffold this practice by teaching the skills required to their students and supporting their reflective abilities. Interestingly, the highest negative response received was from a Non-IB school where three out of the four teachers scored as controlling teachers. When examining the various curricula of the

schools involved in this study, reflection on work completed is not specifically included as an element in the curricula of the Non-IB schools. The role of the teacher is therefore an important factor and the next question will examine the effect of the teacher further.

Teacher effect is one factor to consider with regard to comparing IB and Non- IB students' development of self-regulatory learning. However there are many variables in the schools that impact the results. For example, in the student questionnaire there was one question that was concerned with the setting of learning goals, an important part of self-regulatory practice. In the results there were some large percentages in Not at all True responses from Non-IB schools. Sitzmann and Ely (2011) found that student achievement was related to setting goals as well as persistence, concentration and confidence. These aspects all are important for individual motivation. Goal setting is referenced in the outside layer of Boerkaert's model (1999). Looking at the information on the individual curriculum, mission statements and other written material does not always give us a full picture of the individual school's background. Students in IB schools are used to setting learning goals regularly through the year and they understand them. It is a more embedded process in IB schools and this may influence the students' responses on the questionnaire. The Non-IB schools have varied curricula backgrounds and cultural differences. A further study may require an embedded ethnographical approach within the schools rather than relying on the results of questionnaires. Actually studying the classes and the student/teacher interaction could yield a deeper

understanding of the development of all self-regulatory practices as well as the development of learning goals.

Another aspect of self-regulatory practice is the ability to work independently. The students demonstrated through their responses to the question relating to independent work that they were able to work on their own. Again it is the negative answers that yield interesting information. As presented in Chapter 4 the four highest combined Not Very True and Not at all True are from all the four Nigerian schools. These schools differ in their curricula backgrounds but it is surprising that NS1 with a Montessori background and NS4, which combines Montessori and the International Primary Curriculum have the highest combined negative results. The Montessori curriculum purports independence in learning as a core tenet therefore the students at these schools would have been expected to indicate that they could work on their own. As already mentioned there may be other factors affecting these results and this will be examined further in the conclusion. Boerkaerts and Cascaller (2006) focused on the social context of learning and cues in the environment, which would support self-regulated learning. These could include the classroom environment, the teacher's stance and the school ethos in general.

The focus on the students who had been in their schools for seven years or more yields a number of interesting results from the inventory. When considering learning goals no IB student chose Not at all True, however 11% of the long-term Non-IB students indicated that they did not set learning goals. Goal setting is a more established practice within the curriculum in IB schools. In the question regarding

independent learning, all of the IB students chose either Sort of True or Very True showing that working on their own is an element of the PYP, which the students in the study have developed. A tenth of the Non-IB students selected Not Very True or Not at all True. Some of the schools in the survey either do not include this as a part of their curriculum or the individual teacher does not support the development of autonomy or there are other unknown factors. As previously commented, the schools in the study are varied and culturally complex, there are many variables, which could affect the results, this will be discussed further in the beginning of chapter seven where Boerkaert's model is revisited.

Students in IB schools are expected to become independent learners and be able to work autonomously. When looking at student motivation and whether students were excited about their learning, the long-term students in the study all selected either Sort of True or Very True across the IB group. However in the Non-IB group there were 6% who selected Not at all True in the student questionnaire. This is also reflected in the Tag Crowd results comparing the answer to "Learning is…" where the Non-IB students use of the word boring was more frequent than the IB students. (See Appendix F)

In relation to the motivation of students the open-ended sentence starters included in the student questionnaire yielded a number of thought provoking statements, which demonstrated a variety of student opinions regarding their learning. The iterative sorting of the statements made in response to the first sentence starter yielded three clusters detailed below.

In order to compare the responses with regard to IB and Non-IB schools selected statements are organised into a table (Table 6.1) for easy reference and comparison.

The three clusters are the learning experience, the outcomes of education and student motivation.

Table 6.1 "Learning is…." Statements sorted by cluster and IB/Non-IB

	IB:	Non-IB:
Cluster 1: The learning experience		
	Learning new skills and strategies is a very important part of learning and I feel I do it	Memorising facts and improving
	A way to express your feelings through data and writing. By learning new things you discover yourself	Knowledge that you get from reading and studying
	Very fun and affectful teachers try to make learning fun to understand the concept	When someone teaches the students and they understand
Cluster 2: The outcomes of education		
	Something people do every minute of their life to achieve goals	Your learning helps you think of your future
	A key to my future that helps me do anything in the world with confidence and commitment	Quite hard but worth it because you have to get a comfortable job when you are older
	Something you do your whole life long it makes you smart and helps you your whole life	Something that you learn to write a test
Cluster 3: Student motivation		
	Exciting and interesting I learn new things everyday and want to know more	Sometimes interesting not always, I like learning in different ways like doing things to help myself
	Very nice and fun when I work with others and I can work towards exceeding expectations	Usually boring because its not active learning its writing in a book all lessons
	Fun when you work in groups so you can work with others and if you don't know something you can just ask the group	A bit fun but it needs to be more hands on sort of stuff instead of text book stuff
	Fun most of the time I like the idea of learning new things sometimes I find it a bit difficult but I like the idea of a challenge	Fun it is interesting I enjoy it every day it is like being a professor when you learn

In Cluster 1 the examples given demonstrate different aspects of the learning experiences when comparing the IB and Non-IB students' responses. The IB students reference the learning of skills, strategies and concepts. They talk of expressing themselves and self-discovery. Teachers are seen as making the learning experience fun. The Non-IB students reference knowledge and the memorisation of facts and the statement regarding the teacher does not make the learning sound very engaging.

Cluster 2 shows the split in focus between the two groups. The Non-IB students referenced the acquisition of a job as the outcome of education, whereas the IB students related learning to life generally. The Non-IB students were the only students who referenced test taking. Students generally were motivated but there were more comments from Non-IB students in Cluster 3 who said learning was boring sometimes. As in the example the students gave reasons sometimes mentioning subjects they did not like or teaching methods as here. The Non-IB students did not like textbook learning and wanted more hands-on learning. The IB students talked of liking working in groups and they were excited by challenges and enjoyed learning new things.

These are samples of the statements chosen to represent the categories or groups that emerged from the phenomenographical iterative sort of all the statements made by the students across the study. It is also interesting to consider just the negative statements made by IB and Non-IB students. When completing the "Learning is…" sentence starter there were nine negative IB student comments out

of 187 IB students completing the questionnaire (5%) compared to thirty-two negative comments from 217 Non-IB students. (15%) This suggests that IB students are more positive about their learning.

In relation to Cluster 3 and the inclusion of the word “boring” the Tag Crowds that were created from the keywords both include the word. These were organised into two groups, IB and Non- IB students. (See Appendix F1 and F2). If you compare them it is interesting to see that “boring” figures in both of the Tag Crowds yet it is much bigger (and therefore expressed by more students) in the Non- IB group. The term “strategies” appears much larger in the IB Tag Crowd; the teaching of different strategies for learning is built into the PYP and is not a defined focus in documentation in the other curriculum. To be fair the word “exciting” also appears in both groups, similarly sized in both, so across the different curriculum there are students enjoying their learning.

The IB’s PYP programme involves students in their learning and sees the student as being at the centre of the programme. Students pose questions related to the unit of inquiry and pursue their own lines of inquiry. Teachers plan summative assessments with choices for the students as to the format for presenting their work and demonstrating their understanding of the central ideas of the units. The individual nature of the programmes supports students in developing self-regulatory practices and celebrates and scaffolds independent learning throughout the primary years of school. The research question asks if the PYP develops self-regulatory students more than other curricular models and this is difficult to ascertain fully from a distance.

We need to know more about the different curricula as well as more about the teaching as it appears to be the teachers who affect how self-regulatory their students are. This was the focus of the next research question.

6.3 What is the relationship between teachers' approach to student autonomy and the students' autonomy?

In giving the Problem in Schools Questionnaire (PIS) to the teachers involved with teaching the students in the study, the aim was to be able to explore the relationship between the teachers' approach to the students' autonomy and the students' autonomy. The effect and importance of the teacher's stance with regard to the development of self-regulation in the students they teach has been explored by Deci et al (1999), Darby (2005), Skinner and Belmont (1993), Flink, Boggiano and Barnet (1990) and De Jäger, Jansen and Reezigt (2004). The continuum ranges from highly controlling teachers through moderately controlling and moderately autonomy supportive to highly autonomy supportive. The teachers' results from the PIS questionnaire could be related to the student questionnaire results.

In the Teacher questionnaire in six out of the eight scenarios presented more IB teachers selected the Highly Autonomous response. As previously explained, the International Baccalaureate's (IB) Primary Years Programme (PYP) has self-regulatory practice embedded within its curriculum framework its mission statement includes lifelong learning and student input into the learning experiences is encouraged.

When we look at the teacher scores and the students who scored in the upper quartile (37+ points) there looks to be a relationship between high scoring, highly autonomy supportive teachers and their students.
(See back to Table 4.7 in Chapter 4).

In the teacher questionnaire results nine out of the ten IB teachers scored as autonomy supportive. Five out of the ten Non- IB teachers were also autonomy supportive. Looking at the eight scenarios on the teacher questionnaire in six out of the eight questions more IB teachers selected the Highly Autonomy supportive option in comparison to the Non-IB teachers.

When the data were received from the schools with more than one class it was not clear which teacher was the class teacher for which class of students. Therefore, for this study, those schools have been considered as a whole group of students instead of individual classes.
The highly autonomy supportive teachers with single classes were in three schools: an IB School in Denmark (IBDE), Nigerian School 1 (NS1) and the Pilot UK School (PSUK). In IBDE 90% of the students scored in the top quartile. In NS1 all of the students were in the top quartile. In PSUK there were 87% of the students who scored 37+ points. Highly self-regulating students are matched here by highly autonomy supportive teachers.

However there are two Nigerian Schools, NS2 and NS3, where both teachers scored very low on the teacher questionnaire (0 and 2 points) and are therefore highly

controlling teachers by the questionnaire results. However their students scored highly on the student questionnaire, NS3 had 84% of their students score in the top quartile and NS2 had 100% of the students score as highly self-regulated.

When the data regarding the long-term students who had been in their present schools for seven years or more are examined with regard to their teachers, 87% of the students scored in the upper quartile of the results. 73% of those students scored 40 points or more. The highest number of long-term students was found in the UK school where the student questionnaire was piloted. Out of twenty-one long-term students in the class seventeen students scored 40+ out of 48 on the student questionnaire (81%). Further information regarding the detailed curriculum and even a visit to these schools would be beneficial as there is not a great deal of information available online.

The Nigerian schools' data was collected on my behalf through a colleague who also asked some questions regarding the school's curriculum and practices regarding independence of the students and their learning. The four schools are very different in background.

NS1 follows a Montessori curriculum and is a Christian school. The teacher of the NS1 School scored as a Highly Autonomy supportive teacher. NS2 uses the Nigerian national curriculum as the basis for the learning in school, there are bi-weekly tests and exams. The NS2 teacher scored as a Highly Controlling teacher. The NS2 School stated that with regard to self-regulated learning the students were, "made to

participate," in "interactive lessons." As previously suggested the notion of force is counter to the development of the individual student's self-regulatory practices. Questions of how the study could have been improved will be considered in chapter seven (7.3). It would have been interesting to see the questionnaire being presented to the students and whether extra instruction was been given on top of the instruction sheet provided. In a school where there is a high incidence of tests and exams, would a questionnaire like the student questionnaire be an unusual occurrence and therefore maybe treated more like another test to try to attain the highest mark? Do the students think that there are right answers to the questions on the student questionnaire, maybe seeing the Very True answer as the required answer? De Leeuw (2011) explored the surveying of children and cites the notion of desirability in the way that students may answer questionnaires.

> "In early middle childhood (7 to 10) children have a tendency to please and are afraid of doing something wrong. This may result in more superficial answers and in an inclination towards social desirability".
>
> (De Leeuw (2011) p.8)

This also links to the teacher who contacted me with regard to her students selecting the answer they believed that she would want them to choose. De Leeuw (2011) mentions this phenomenon as well, outlining how the students of this age want to please the teacher or researcher. When considering the pattern of Sort of True responses from the IB students in section 5.2, this notion of desirability may also be useful in considering the reasons behind the IB students' answers. The IB student through their exposure to the Learner Profile attributes and development of self-

regulatory practices may be less susceptible towards selecting the “desired” response.

If we look at the statements the students from NS2 made in completing the first sentence starter on the student questionnaire their statements are quite product or knowledge acquisition based. More information is required to understand fully the reasons behind the different results across these schools.

NS3 uses a mix of the Nigerian National curriculum and the UK National curriculum in a Christ-centred programme. The teacher at NS3 scored on the PIS as a Highly Controlling teacher. The school follows the Nigerian national assessments and there is regular testing. When asked about developing independence, it was stated that, “The pupils have been trained to work independently but are to signify when they need help.” This does not indicate the teacher’s role in supporting the students as it sounds as though the responsibility for learning on their own is the students’. Working independently and having developed self-regulatory practices and strategies are not necessarily the same. As already stated more information and first-hand experience of the school would be beneficial here. The school environment was described as one that encouraged, “participation, curiosity and inquiry.” It would be interesting to find out more about how the curriculum was delivered by the teachers.

NS4 uses a blend of Montessori approaches and the UK National curriculum in the early years. The International Primary Curriculum is blended with the Nigerian national curriculum in the Primary School and the national assessments are

followed. The NS4 teacher scored as a Moderately Autonomy supportive teacher scoring in the middle of the continuum of possible scores on the PIS.

There is a relationship between the teacher's stance and the students' development as self-regulatory learners. In the follow up interviews with the students in one of the IB schools in the survey, the autonomy supportive nature of their teacher, identified by the questionnaire is apparent, in the comments that the students make about him.

> "He gives us ideas, he uses the Smart Board -he gives us chances to do something". (IS3)
>
> "I'd say with more enthusiasm (of the teacher) you would be more enthusiastic to learn." (IS9)

Classroom observations of the teachers involved at the other schools in the study would have provided more information with regard to self-regulation and the teacher's support of autonomy as well as allow for greater triangulation of the results. In the same IB school where I conducted follow-up interviews with a group of students, I was also able to observe the students' class teacher so I was aware first hand of his teaching style and classroom organisation. This teacher often has students presenting work and sharing their knowledge to broaden the understanding of the unit for the whole class. He talks to the class for a short time and gives instructions. You can see from the student interviews, as well as their questionnaires, that he has scaffolded the students' learning from the beginning of the year and they have grown in their independence, autonomy and self-regulation.

When we consider the scores of 40 or more there were three out of five highly autonomy supportive teachers who had 75-80% of their students score 40+ points. Looking at NS2 again when we examine the 40+ scores out of sixteen students there were five who scored 100% (48 points) yet their teacher was rated as highly controlling.

Overall the students surveyed scored highly on the student questionnaire, 83% scored 37 points or more out of a possible 48 points. If we consider the scores lower than the top quartile there are only sixty-six out of the four hundred and four students who scored less than 37 points, which is 15% of the total sample. Table 4.6 in the data chapter shows how all of the schools' mean scores are in the top quartile of the results, therefore does the student questionnaire accurately show the level of self-regulatory behaviour in the students' studied? Does the instrument used provide enough discrimination?

Looking at the qualitative data from the student questionnaire, in particular the responses from the students to the first sentence starter "Learning is…", comments were made regarding the aspects of learning related to motivation. These comments tended to relate more to the teacher than the curriculum. The students referenced how they were taught rather than the subject of the lesson. IB students commented that, "Teachers try to make learning fun." They also were aware that the responsibility for their learning was in their hands, "When only the teachers tell you it doesn't necessarily mean you know it. You figure out things yourself that there is a deeper thing."

Non-IB students had opinions about how they should be taught, “I enjoy it when our teacher (rather than talk and write) shows e.g. showing us insects we are learning about.”

Other statements include:

“Fun and enjoyable as long as your teacher makes it fun.”

“Sometimes can be a bit boring with the wrong strategy or teacher.”

“Fun but quite boring when the teacher takes a long time to teach you it.”

“Learning is sort of fun but sometimes we do tests and I don't really like it.”

The students, as consumers of education, are aware of what is an engaging lesson is and the role of the teacher in motivating the students. Does the questionnaire therefore tell us enough? Reflections on the study and this question will be examined later in chapter eight.

Hattie (2012) examined teaching and the effect of teachers. In “Visible Learning” he states,

> “ Developing self-regulation and developing “students as teachers” are powerful mechanisms for improving learning.”
>
> (Hattie 2012 p.161)

This has come to be a central issue in this study. There are many ideas with regard to how best students learn and many theories and philosophies about education. The teacher and student relationship with regard to autonomy is a vital area for the students’ development of self-regulatory practices. Having students take more responsibility for their learning and for them to teach others is a powerful concept.

The title for this research focused on the influence of the curriculum but the teacher is the pivotal player in the delivery of the curriculum. The teacher's stance with regard to supporting autonomy seems also to be crucial. With regard to the curriculum in schools the effect of the teacher is still paramount as it is the teacher who delivers the written curriculum. The implication for the future here is in examining teacher training which is explored further in chapter eight (8.2).

6.4 To what extent do different curricula embed the promotion of self-regulated learning and autonomy within them?

The varying curricula backgrounds of the schools are quite complex in that they include national curriculum schools in the country as well as an international British National Curriculum school. Also within the group of IB schools there are a variety of schools, which are at different stages in their development. Some of the schools are fairly young and others are more established. In the answer to the first research question information was provided regarding the IB's PYP curriculum documents and the elements contained within the curriculum, which do support and promote self-regulated learners. As explored previously in the data chapter, the IB curriculum documentation explicitly includes many aspects of self-regulated autonomous learning, as a fundamental tenet of the IB philosophy is lifelong learning.

There were two British National Curriculum schools in the study. One, the pilot school for the questionnaire, is in the UK and the other is an international British National Curriculum school, which also uses the International Primary Curriculum for science and humanities units. The pilot school mentions a love of learning and encourages the independence of the students. Neither school specifically references

self-regulation in its documentation. The international British National Curriculum School and the pilot school use SATS assessments in the primary school. There have been some UK based research into independent learning, which shares features with self-regulated learning but this does not seem to have transferred to the written curriculum.

The Nigerian schools' various backgrounds have been outlined earlier in this thesis and all except NS1 use National tests none however specifically mention self-regulated learning. The South African school had very little information with regard to the curriculum only that the national curriculum was followed. Their Mission statement includes the desire that all the children grow up to be "happy learners."

The Non-IB schools in the study have some elements of independent learning in their curricula to varying degrees but none specifically reference self-regulation. Delving more deeply into the curriculum for each of the schools, searching for aspects of self-regulated learning yielded varying results. Often, rather than the term self-regulation, curriculum documents include independent learning or lifelong learning. The UK National Curriculum information does include some reference to "independent learning". The major curriculum documentation focuses more on the knowledge required at the various key stages and is still test based. There was an example of good practice from Ofsted (2011) which charted the use of the Effective Lifelong Learning Inventory (ELLI) in one primary school. This project, from Bristol University has identified seven characteristics of effective lifelong learners and has been explored by a number of educational practitioners in the UK. These seven characteristics are changing and learning, critical curiosity, meaning making,

creativity, resilience, strategic awareness and learning relationships. All of these attributes contribute to the development of an independent learner.

As previously mentioned when looking at the Nigerian group of schools, NS1 uses a Montessori based curriculum in Nigeria, whereas the other three schools are more based in the Nigerian National curriculum. The latest documentation (2012) mentions lifelong learning as, " a basis for scientific and reflective thinking." It is still test based and textbook led but does mention "engaging learning activities."

In connection with the South African school, in 2012 the South African curriculum was reviewed. It is still test based but there are aims of using critical and creative thinking, working independently and as a team and a desire for students to, "organise and manage themselves and their activities responsibly and effectively".

In the IB PYP schools the curriculum information from the IB is student-centred and includes many self-regulatory practices within its framework. Continuums of learning are provided in developmental stages. Test taking is one facet of assessment and textbooks are not mentioned specifically as schools use a range of resources for their units. The latest update to the IB website states, "The PYP is committed to structured, purposeful inquiry that engages students actively in their own learning".

It is not possible to see how teachers are being trained or instructed in how to deliver the various curricula. The details of the curriculum are outlined so we can see what is planned, but how this is going to be conveyed to the students is not described in the curriculum documents. In the case of the IB there is an online curriculum centre available to IB schools and there are online courses and face-to-

face workshops, which support the pedagogy of the IB through the education of teachers in the philosophy and practice of inquiry teaching.

What about the "hidden curriculum."? Looking at the schools' documentation or statements made on school websites, what is actually happening in the schools, in the classrooms, in the daily interactions between the students and the teachers? How are teachers trained to deliver the curriculum? Are teachers prepared through their training as teachers to support students in their development as self-regulated learners? How do schools continue professional development for teachers particularly with regard to teaching self-regulation?

In the journey of this study the focus was the students. However, the teacher, the learning environment and the curriculum all have a role to play in the development of the students' self-regulatory practices. This will be examined further in Chapter 7.

6.5 Summary

In this chapter the data were examined in order to answer the four research questions. The International Baccalaureate's Primary Years Programme (PYP) was shown to support self-regulated learning. The different curricula of the schools in the study were examined and the PYP was compared with the other curricula models through the data gathered. The responses to the first sentence starter "Learning is…" were organised into a table showing the three clusters. The relationship between the teacher's approach to student autonomy and the students' autonomy was discussed.

The first concluding chapter follows next with a focus on self-regulated learning.

Chapter 7: Conclusion 1

Self-Regulated Learning

The purpose of this study was to examine the self-regulatory practices of students at the end of the primary years of schooling and to ascertain whether the International Baccalaureate's Primary Years Programme facilitates students' motivation toward autonomous learning. The research journey for this study has been long and varied and it has provided a fascinating insight into the development of self-regulatory practices in a variety of schools. This chapter pulls together themes and conclusions from the study and reflects on the process and product of the research answering the research questions.

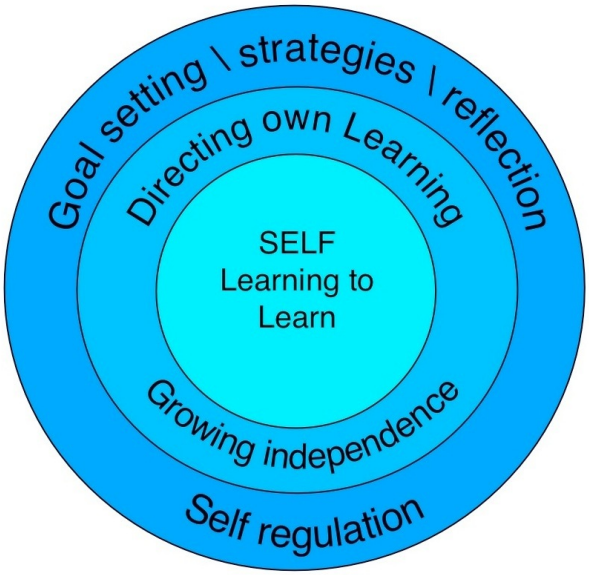
It starts with a consideration of Boerkaert's model of self-regulation, introduced in the literature review, and relates the layers of the model to the study and its findings. A two-dimensional representation of self-regulated learning is included, which demonstrates the complexities of the influences on the student, as well as the factors that support self-regulated autonomous learning.

This chapter concludes with consideration of the process and product of the research and its limitations, as well as some suggestions for further research raised by conducting this study.

7.1 Boerkaert's Model of Self-Regulation revisited

In order to consider the development of self-regulation in the students involved in this study we will return to Boerkaert's model and track the three areas of her model through the study.

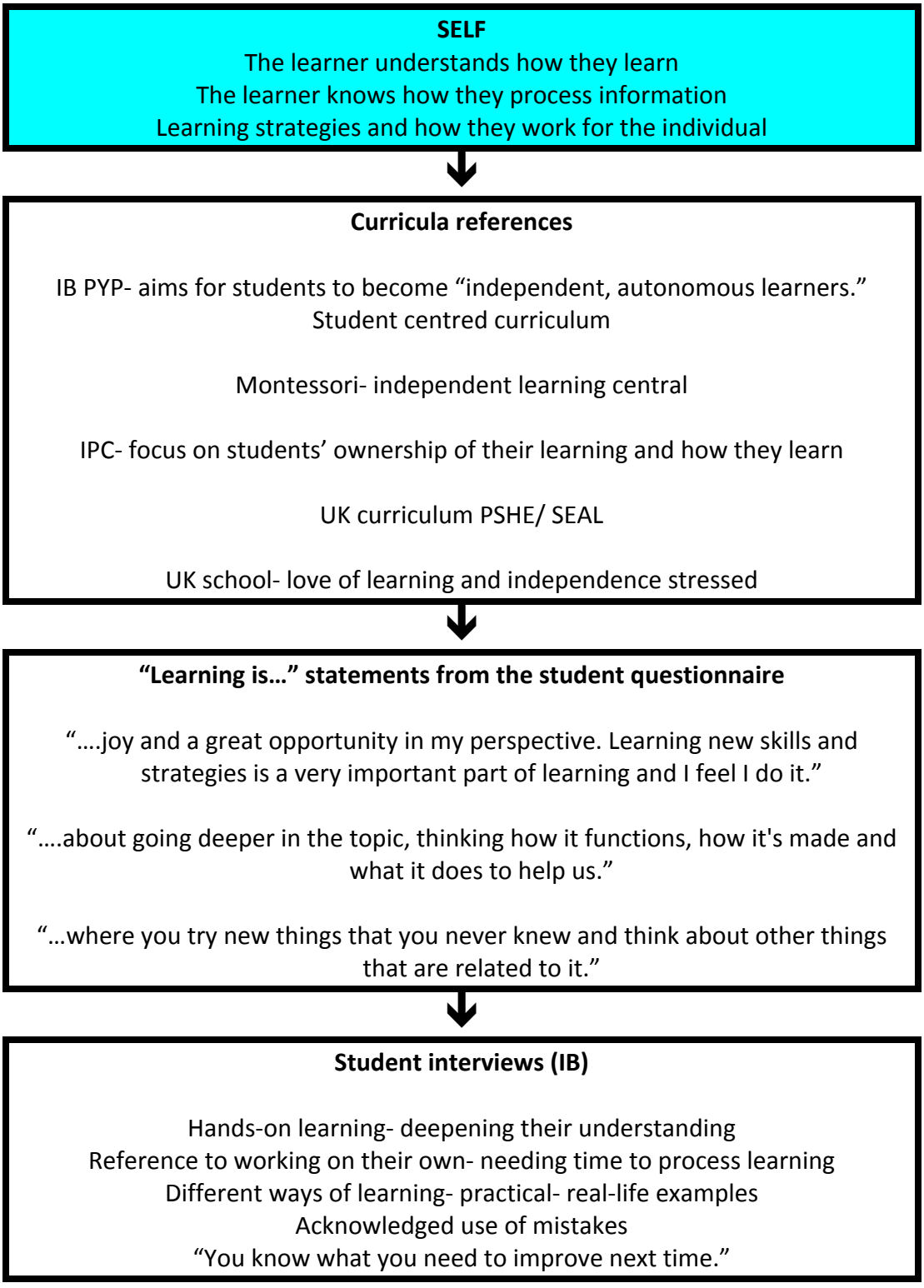
Figure 7.1 A representation of Boerkaert's model of self-regulation



The centre of the model relates to the learner's self-knowledge with regard to how they learn best. The student is taught skills and strategies as well as how and when to use them. The curricula backgrounds of the schools in the study include elements of self-regulation, a focus on the individual learner and their independence as well as the responsibility and ownership for learning being with the student. The boxes that follow each section of Boerkaert's model (Figure 7.2) refer to aspects of these areas

seen in the schools in terms of the curriculum, perceptions of learning and student interviews, with exemplification of each part.

Figure 7.2 The centre of Boerkaert's model - The Self



With regard to the students developing their awareness of how they learn best, the IB's Primary Years Programme (PYP) has self-reflection built into its framework as a regular practice. This could be through the transdisciplinary theme or through a specific unit of inquiry. For example, one of the six transdisciplinary themes, is "Who We Are"

> "An inquiry into the nature of the self; beliefs and values; personal, physical, mental, social and spiritual health; human relationships including families, friends, communities, and cultures; rights and responsibilities; and what it means to be human."
>
> ("Making the PYP Happen." 2009 IB)

Within this theme students can focus on the different ways they learn and their preferences as well as reflect on their learning. Each unit has a reflective evaluation phase at the end when students complete their summative assessment. Here students may assess themselves on the particular skill or strategy they have learned in the unit and are able to reflect on areas for development as well as set learning goals.

In Montessori there is a focus on the individual learner and their independence. The International Primary Curriculum has the students' way that they learn as a particular emphasis. The UK National Curriculum School in Dubai saw an understanding of the educative process as preparing the students for independence as learners as important. In the UK curriculum Personal, Social and Health Education (PSHE) focuses on positive behaviour and how to be an effective learner. Social and Emotional Aspects of Learning (SEAL) has a primary unit entitled "Going for Goals" which explores the student as a learner and involves self-reflection and goal setting,

core aspects of self-regulatory learning. Students assess their learning against individualized learning targets and have learning journals. Central to the model is the learner and the development of metacognition. Zimmermann (2002) described how metacognition through greater self-awareness could improve the self-control of the learner and therefore lead to self-regulation. Students who understand their strengths and areas in need of development can develop self-regulatory capacities.

Hattie (2012) sees the terms metacognitive skills and self-regulation as interchangeable and relates this to one of the ultimate goals of learning, that of lifelong learning. Azevedo (2008) sees metacognition as part of the monitoring process in the development of self-regulation. De Jäger, Jansen and Reezigt (2004) highlighted the importance of metacognition in primary school learning and teaching environments. This central focus on the learner and metacognition would seem to fit with the data in the study, particularly the students' responses to the sentence starter "Learning is…." as these statements highlight the students' level of understanding about their own learning. There were comments made which related to the centre of Boerkaert's model and a number of these are included in the data sections of the thesis and in the figure (7.2) above. The students generally expressed their interest in learning, trying new things, finding out about the strategies they could use and developing skills. The majority of students in the study across all the curricula schools are demonstrating their metacognitive skills, reflecting on what they are discovering in their education. They are enjoying finding out more about topics and making connections with previous learning and subjects.

The follow up student interviews provided the opportunity to probe more fully into the learning at one of the IB schools in the survey and to find out from the students themselves about how they felt they learned best. The notion of knowing how you learn was articulated by the students in their statements and they acknowledged the value of hands-on learning as helping them to understand ("I do and I understand", the quote at the beginning of Chapter 1). As previously mentioned in Chapter 5 (5.2 The Student Questionnaire and 5.3 Student Interviews) the students often mentioned the practical nature of their lessons where real-life items were used to aid understanding. For example, in Mathematics, their teacher had encouraged the students to bring in grocery items to further the students' work on weight.

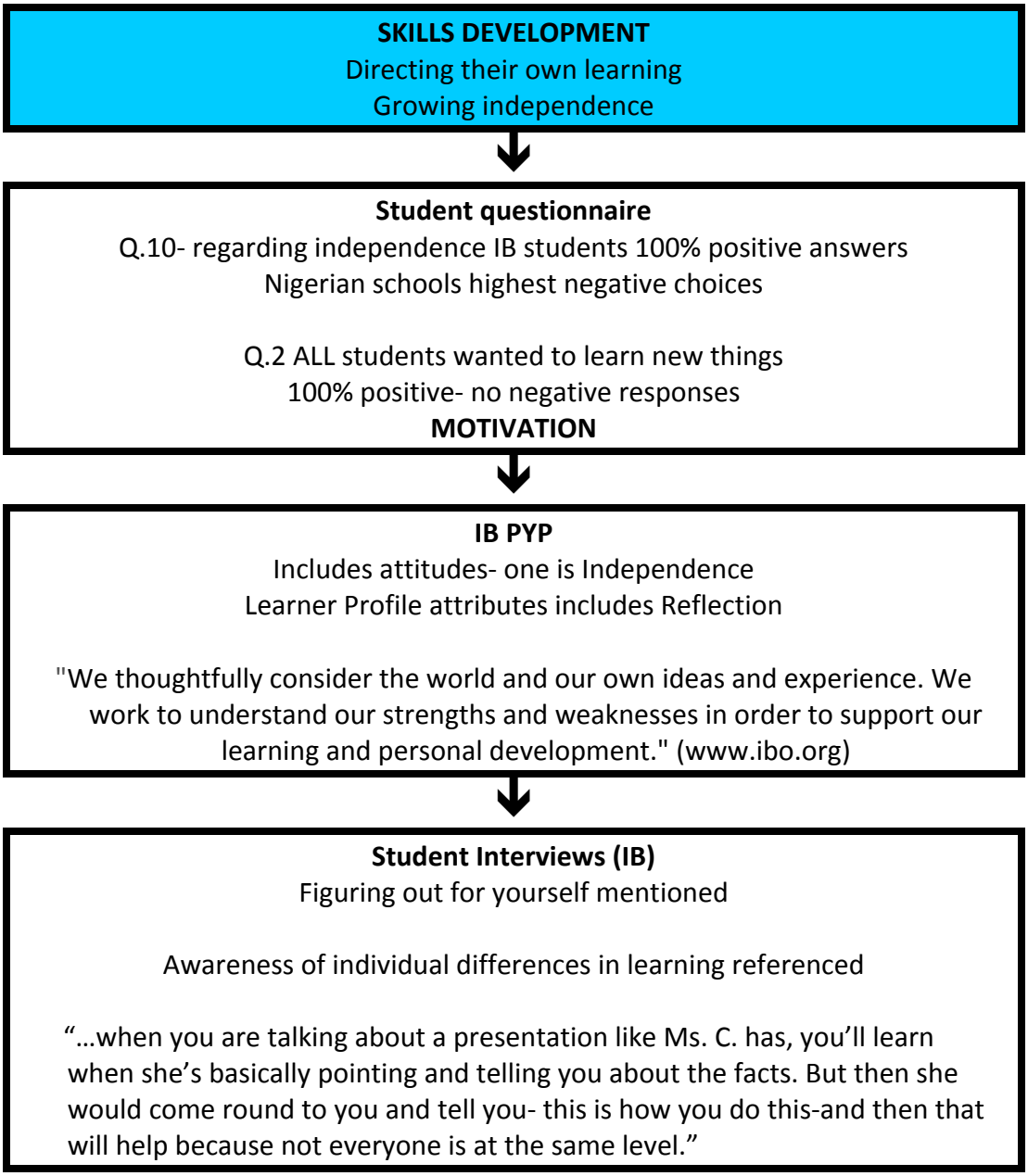
The middle layer of the model is when students are taking more responsibility for their learning and make choices with regard to that learning. The students' independence is developing.

Examples from the data collection show how this section of Boerkaert's model was reflected in the schools in this study. The students are beginning to accomplish the skills related to autonomous learning and the teaching supports this development.

In Boerkaert's model the middle section relates to the growing independence of the student. The results from the student questionnaire showed a difference in perceptions between the types of schools: the IB students in the study all felt they could work independently, whereas the four Nigerian schools all had students who selected Not Very True or Not at all True for question ten which related to working

on your own. The four Nigerian schools were the highest combined percentages for the negative responses to that question.

Figure 7.3 The middle section of Boerkaert's model - Skills Development



Some curricula explicitly state that there is support for independence in learning and for others it is not such a focus. All students regardless of curriculum were motivated to learn new things as indicated by the results from question two. The idea of directing one's own learning relates to choice of areas of study. In the PYP students'

wonderings and questions regarding the unit or related topics are incorporated into the unit being studied and students are often given choices regarding the presentation or topic of assignments and assessments.

The PYP students interviewed made comments relating to their independence and how they worked ideas out for themselves. One student also made reference to his or her teacher supporting individuals. The student was aware of the teacher's differentiation as well as the individual levels of understanding in the class.

The Learner Profile attribute of Reflection is focused on within the PYP curriculum framework and is an important area with relation to self-regulation for all students regardless of curricula. Reflection involves developing more self-awareness of your strengths and weaknesses in order to set goals for future learning. Through the results from the student questionnaire a good majority of the students had developed reflective skills and thought about themselves as learners. In the quantitative results from the student questionnaire 83% of the students in the study scored in the top quartile. The questions in the student questionnaire focused on practices relating to self-regulation of which reflection is an important aspect. As one student stated in interview,

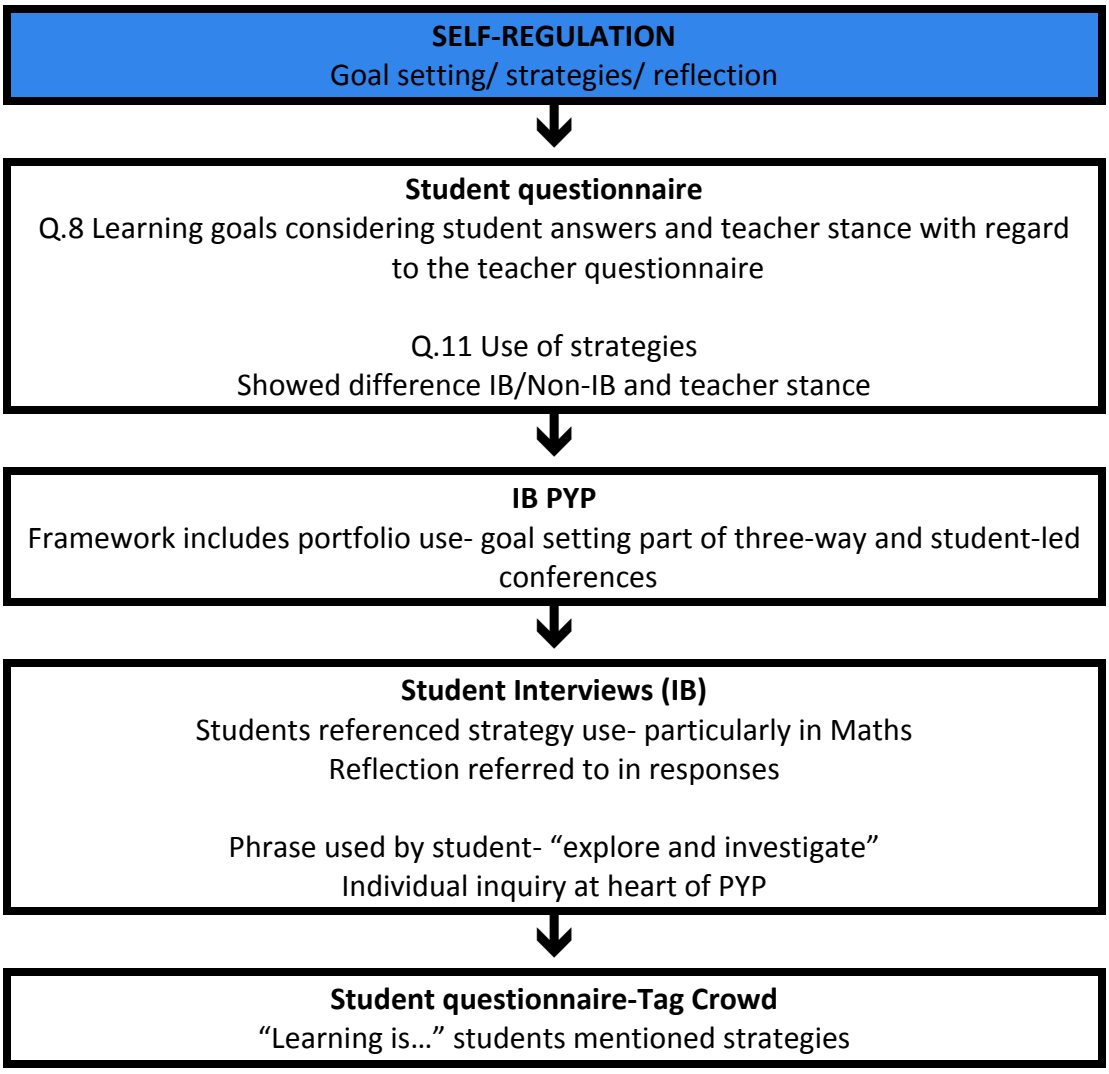
> "You do need that time alone to reflect as you can't copy off someone, it's your reflection."
>
> (Student interview)

Specifically in question 7 on the student questionnaire, which related to whether the students thought about their work to help them improve in the future, 91% of the students selected Very True.

Figure 7.4 The outside section of Boerkaert's model – Self-Regulation

The outside layer of the model is where students are self-regulated: setting goals, using strategies learnt with confidence and reflecting on their learning in order to progress. In Figure 7.4, which examines the outside layer of Boerkaert's model, examples are again provided from the data.

Figure 7.4 Boerkaert's model – Self Regulation



The student questionnaire asked whether students set learning goals and it was interesting to see that there were responses from IB and Non-IB students indicating that they were not setting goals for their learning. Goal setting is part of the IB PYP curriculum but not all Non-IB curricula models specifically include the setting of goals. Matching the students who selected Not Very True for this question to their teachers in the study and comparing the students' responses to the teacher questionnaire results did not yield a clear correlation between teacher stance and student response. NS3 had 17% of students answering Not Very True and had the most controlling teacher according to the Teacher questionnaire results where the teacher scored 0. NS4 had 25% of the students selecting Not Very true yet their teacher scored in the middle of the continuum. The next highest Not Very True responses (16%) were from PSUK and their teacher scored as highly autonomy supportive. This issue will be referred to later in the limitations of the research (Chapter 8). The setting of learning goals does require teachers' support in scaffolding the students in identifying areas for development and setting achievable, realistic goals.

Question eleven, which related to the learning of strategies to aid student learning, also had students responding Not Very True. Goal setting is one self-regulatory strategy, which involves the students being more metacognitive and learning about their learning as well as being able to identify the next step to aim for. The teaching would involve the students being taught strategies for different areas of the curriculum. As the students practised these and evaluated them this would become

part of the goal setting exercise where students would identify areas of the learning they needed to improve and set goals towards these aims.

The students who answered that the statement regarding setting learning goals was Not Very True, suggests that their teacher was not very focused on the development of learning goals. In the IB PYP, students regularly set learning goals as part of self-assessment and evaluation of their learning. Interestingly, the Not Very True results showed one IB school with 20% of the students selecting this option even though their teacher scored a low, moderately autonomy supportive score on the teacher questionnaire. Although goal setting is part of the PYP curriculum it does not necessarily follow that teachers will include all aspects of the PYP curriculum in their classroom. There were also three Non-IB schools, which had 8-13% of students selecting Not Very True. Here the curricula background of the schools did not include a focus on strategy teaching. The results from the teacher questionnaire for the teachers in these schools showed levels in both the mid and high autonomy supportive range.

In the student interviews strategies were discussed particularly with regard to Mathematics teaching and learning. Students reflected on the way they were taught and also considered how they used strategies to help in Mathematics. One student explained how her mother had tried to teach her a different way to work out an answer but she was happy with the strategy she had learnt already. In interview she commented,

> "My Mum has a different way of subtracting than I do. If my Mum forced me to do subtraction this way I wouldn't exactly get it."
>
> (Student interview)

The IB's PYP does have individual self-directed inquiry at the heart of the programme and by the time that the students reach the last year of primary they should be able to steer their own learning with a degree of independence. In the final year of the PYP, the students select an area to develop within one of the transdisciplinary themes and they write their own central idea and lines of inquiry and use their own questions to guide the study. The students stage an exhibition of this unit to celebrate the culmination of the programme, usually for other students, family and friends.

The Tag Crowd of responses from the first sentence starter "Learning is…" did include strategies, however this term was used more by IB students than Non-IB students in the IB Tag Crowd and therefore the word is larger in the word cloud. (See Appendix F1 and F2). The planned and deliberate teaching of strategies is a feature of the IB PYP programme.

The three layers of Boerkaert's model are all involved in the development of self-regulation and an autonomous learner will have developed all of these aspects. Looking at the three figures and the development of the self-regulated learner, there are aspects of this development across all of the schools in the study. In considering Boerkaert's model of self-regulation again, knowing that it was created in relation to older students, I wonder if there should be another Emergent layer with regard to the younger students in this study who are in the development stage as self-regulated autonomous learners. (See Figure 6.5 below) At this stage self-regulatory practices are emerging. The teacher more explicitly introduces and teaches these practices at this stage. The teacher would model the self-regulatory practices and scaffold the students in their development.

Prior to Boerkaert's centre of the model, which was concerned with the self and metacognition when students learn how to learn, I would suggest that younger primary age students in many schools are introduced to aspects of self-regulation and autonomous learning. The IB's PYP gradually builds students' independence from the younger classes through discussion of the units and learning generally. Reflection practices for example, start with the youngest primary students assessing how they have performed on an assessment task by colouring a series of smiley faces. As the students become able to read the pictorial aspects are replaced with teacher created written statements. The next stage in the development would involve the students discussing an assessment task and then the teacher co-creating their assessment rubric in their own words. When the students are able to be involved with independently creating their own assessment rubric they develop and write their own. Other practices relating to the development of self-regulatory autonomous learning would be modeled, demonstrated, practised and eventually independently applied. In a PYP classroom with the younger primary years there is a growing ethos of increasing student choice as the students develop, for example in areas for individual or group research or in choices of format for the presentation of ideas. There is a great deal of class and group discussion involved in this and teachers support and scaffold the students in learning the skills and strategies involved in developing the students' independent learning. In a unit of inquiry the teacher plans the unit's summative assessment. As an example in a unit about exploration this may involve the students choosing an explorer to research and present their findings for the final assessment. However there are a number of skills, which the student needs to learn in order to complete this task. They need to

understand what exploration is about and what an explorer is. The student would need a range of research skills like note taking and would then need to understand how to present their information. The teacher would model and teach a range of note taking methods and the students would practice them and select the method they found the most effective. The final assessment could include an element of assessment of the students note taking skills as they make notes on each student's presentation and then are given a quiz on explorers, which they have to use their notes to answer. Often the teachers would explicitly teach various formats for presentations through the year levels to enable the student to develop their toolbox of skills. As the student moves from the Emergent Self-Regulated Learning centre to the next Self/ Learning to Learn layer of the revised model they are more metacognitively aware of themselves as learners.

Figure 7.5 Adapted Boerkaert's Model for younger learners

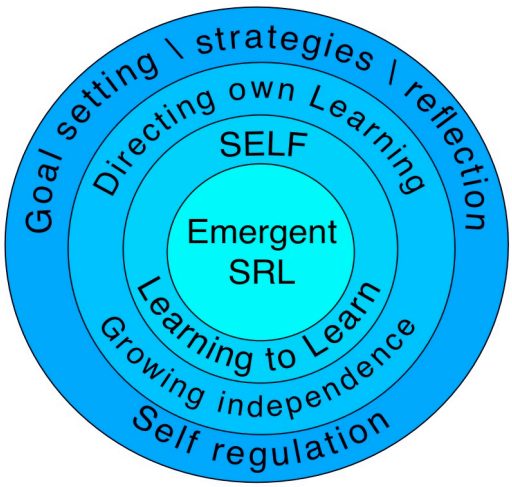
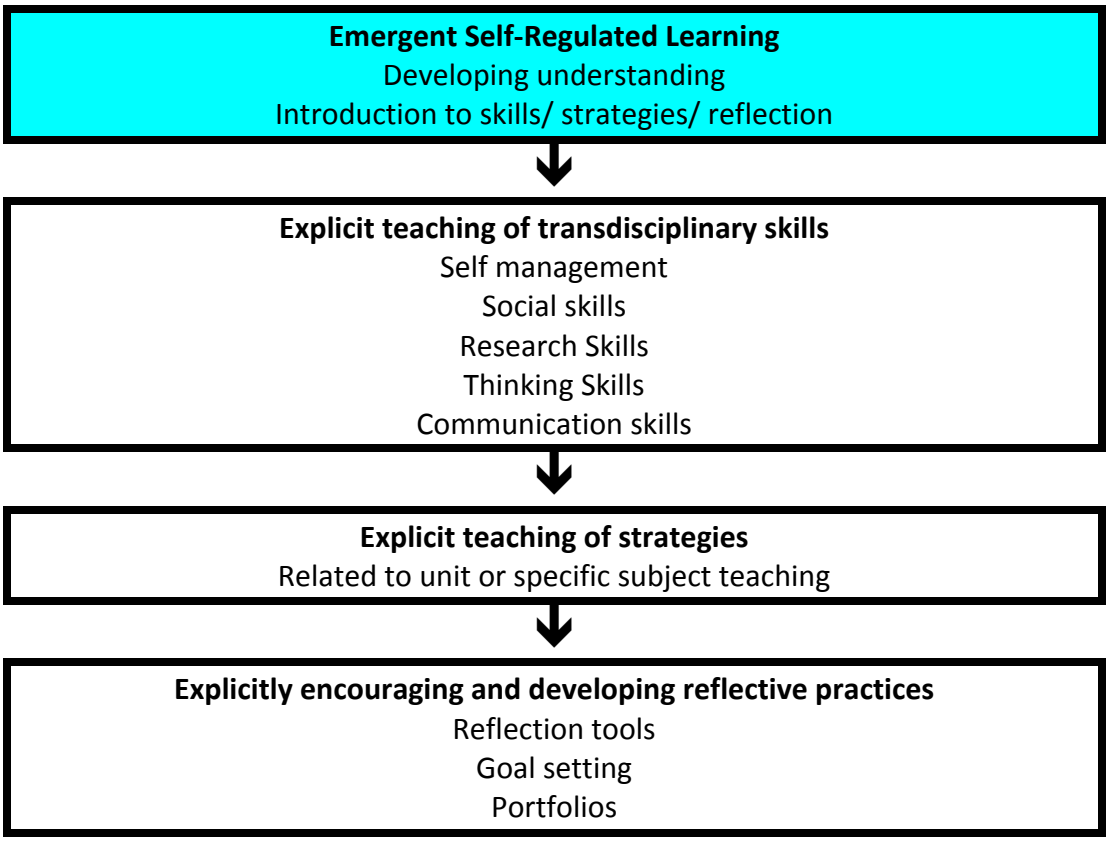


Figure 7.6 Details of the Adapted Boerkaert's Model for younger learners



In Boerkaert's original model the role of the teacher in the development of self-regulation is not outlined. In the revised model within the new Emergent Self-Regulation Learning centre is where the skills, strategies and practices essential to the development of independent, autonomous learners are initiated and encouraged by the teacher. The model could be seen from the centre to the outside as growing independence for the student and diminishing support from the teacher as self-regulation develops, this is developmental and not age-related.

The next section explores the shift in emphasis in this study, which involves the central role of the teacher in developing self-regulatory practices with their students.

7.2 Shifting focus of the research

This thesis began by asking the question as to whether the IB's PYP develops students' motivation toward self-regulatory, autonomous learning. The results from the research study would indicate that the PYP does support the development of self-regulatory learning. However, there are many factors to be taken into consideration in this conclusion.

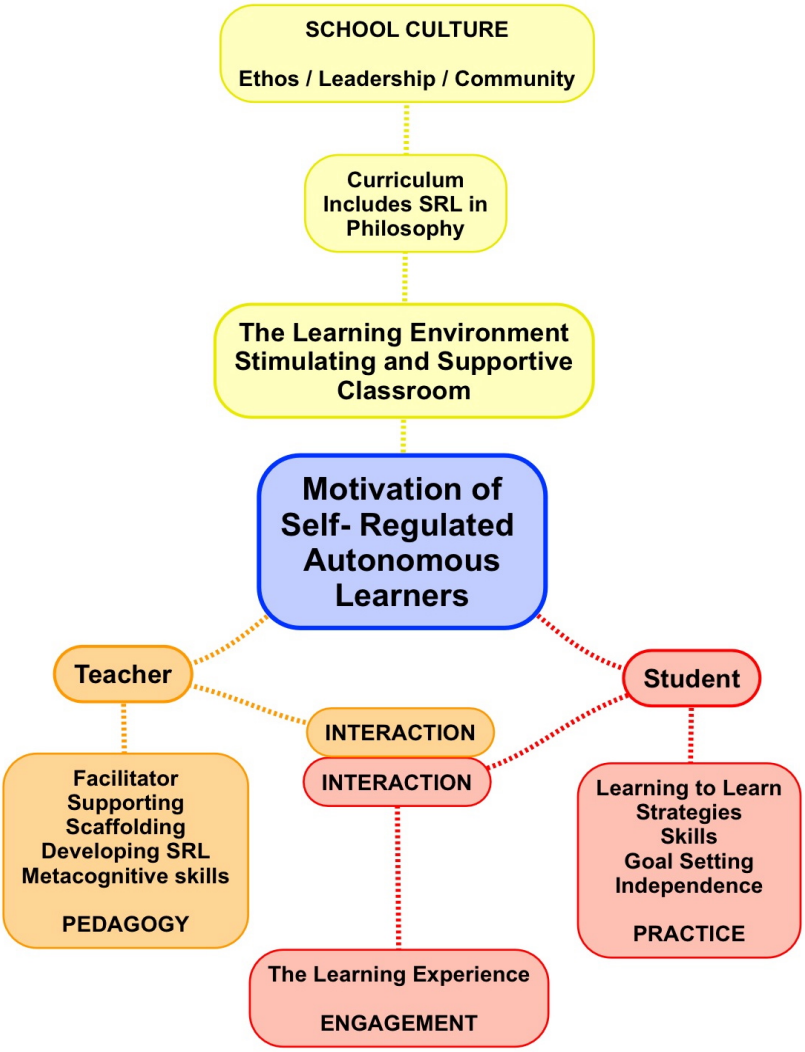
Figure 7.7 below demonstrates the central theme of the thesis and shows the key factors involved in self-regulated learning. The original premise was that the curriculum, and specifically the IB's Primary Years Programme (PYP), develops students' motivation toward self-regulatory, autonomous learning. However, during the course of the study the focus of interest has shifted to the central relationship between the student and the teacher.

The influence of the teacher in facilitating learning in the classroom is the most important and motivating factor in inspiring students to want to learn. Regardless of curriculum, learning for the individual student develops from the teacher-student interaction. A truly autonomy supportive teacher, who through their passion for their teaching is able to inspire and motivate their students to want to learn, is a crucial factor in students becoming self-regulated, autonomous lifelong learners. The teacher supports and scaffolds the learning for the student so they can become more self-regulatory.

The study was able to only show some elements of this relationship through the student and teacher questionnaires. The follow up student interviews in one of the

IB schools in the study deepened the understanding further and highlighted the need to know more about the individual schools than was able to be discovered from published curricula and school's individual websites.

Figure 7.7 2D Representation of Self-Regulated Learning



A school culture is more than its mission statement and a list of nationalities. The leadership, staff/student relationships, the support in the school community for self-regulated learning as well as the inclusion of autonomous learning embedded within the curriculum are all important players in the learning environment for the students. In a school environment learning is more than words in curriculum documents or on a website. It is more to do with the school culture and how this promotes and facilitates the learning that matters. The shift of emphasis in the study developed from the data collected and the direction of focus changed from the curriculum to the teacher.

The importance of the teacher in developing autonomous learners is also related to a consideration of teacher training and the need to include the pedagogy of self-regulated learning as a central focus within the syllabi for teacher education courses. This topic will be returned to in the last chapter.

This chapter concludes with a reflection on the research process through the research questions. The limitations of the study are considered and further questions are raised that will be explored in the next chapter.

7.3 The process and product of the research

In this section the research questions are discussed further. The key issues of the curriculum, pedagogy and the effect of the teacher are outlined with relation to the development of self-regulation. The limitations of the research are considered with regard to the composition and control of the sample and the use of the data collection tools i.e. questionnaires and interviews. Suggestions for improvements and further questions are included.

7.3.1 Does the International Baccalaureate's Primary Years Programme develop self-regulated learning in students?

This thesis adopts Paris and Newman's definition of self-regulated learning in which it is viewed as revealing,

> " Planfulness, control and reflection; it indicates competence and independence, which are virtues that are prized on the developmental path to maturity."
>
> (Paris and Newman 1990 p.87)

In the student interviews, students who were studying in one of the IB PYP school in the study, revealed their "planfulness, control and reflection", in the confident way they discussed their learning as well as in their ability to use reflection to set goals and plan for their future learning. The notion of motivation toward self-regulated learning embodied in the overall research title and identified as directly linked together by Schunk and Zimmermann (1997), was demonstrated by the IB PYP students' general excitement and interest in learning shown in the sentence starters and the student interview.

Perry (1998) found that seven and eight year olds were capable of beginning to manage their own learning, which is a link to the suggested Emergent level in Boerkaert's model of self-regulated learning in the previous section.

There are also examples of positive statements from the student questionnaire in the sentence starter "Learning is…" which shows students in the study (IB and Non-IB) being reflective and thoughtful with regard to their learning.

> "Learning is a habit that you should have rather than studying. This is because you practice the same strategies again and again when studying but you learn good strategies when learning."
>
> "Learning is a way to express your feelings through data and writing. By learning new things you discover yourself."
>
> "Learning is a key to my future that helps me do anything in the world with confidence and commitment."
>
> (Student questionnaire)

From the Tag Crowd word clouds included in the Data chapter the word "fun" is large (in both the IB and Non-IB word clouds) and therefore stated more by the students in the study and included in their completion of the sentence starter "Learning is…" Teacher influence, reasons for learning and the excitement of being a learner are referenced,

> "Learning is really fun because you get to do/try new things thanks to my teacher."
>
> "Learning is about having fun and learning things that can help you."
>
> "Learning is really fun and I am always excited to find out what we are to be learning the next day. I love learning!
>
> (Student questionnaire- sentence starters)

The statements made by the students on the student questionnaire were categorised as to whether they were positive or negative statements regarding learning. (See Appendix) Independent, motivated students would tend to be more positive regarding their attitude towards their learning. There were 32 negative statements, 23 from Non-IB school students and 9 from IB school students. The statements made related to aspects of the curriculum and the teacher as well as the learner themselves. A number of the statements were qualifying statements,

> "Learning is a bit fun but it needs to be more hands on sort of stuff instead of text book stuff." (Student questionnaire)

Here the student is commenting on the way the curriculum is delivered through a more textbook based approach when they would enjoy a more interactive approach. The way the teacher presents the learning is also highlighted in a number of statements made in response to the "Learning is…" sentence starter. An example is,

> "Learning is fun and enjoyable as long as your teacher makes it fun." (Student questionnaire)

There is also an element of self-regulation and a notion of the independence of the learner in some statements; here the student has personal preferences regarding their learning,

> "Learning is fun but it depends on what I learn because I like to learn about specific things." (Student questionnaire)

In the quote below the student enjoys learning but has also highlighted the importance of the way they are learning, which again involves the teachers' approach.

> "Fun but also boring depending on what you are learning and how." (Student questionnaire)

The student questionnaire results show that many of the students in the study are developing self-regulatory practices to varying degrees. Across the different schools in the study it was apparent from the student questionnaire that students are motivated to learn, 80-100% of the students from each school in the study answered that they enjoyed learning. (Question 12)

The IB's PYP as a curriculum framework embeds self-regulatory learning strategies as a core focus in the development of an independent lifelong learner. (See IB Mission statement in Data chapter). The data collected appears to endorse the perception that the students in IB schools are more confident and have been exposed to more self-regulatory practices as part of the curriculum.

However, in the analysis of the data from the student questionnaire it became apparent that while the IB's PYP does develop self-regulated learners, so do other curriculum models in other schools. In analysing the data, both qualitative and quantitative, it became clear that the original focus of the thesis on the curriculum, which supports the development of the self-regulated learner is in the hands of the individual teachers who interpret and deliver that curriculum and that the

development of self-regulated learning is centred more in teacher- student interactions. This issue will be discussed further in 7.3.2 and specifically 7.3.3 below.

7.3.2 Does the International Baccalaureate's Primary Years Programme develop students' self-regulatory learning more than other curricula models?

This question again focuses on the various schools' curricula models. The role of the teacher is an important consideration when answering this research question, as are the other elements of the representation of Self-Regulated Learning (figure 6.6) in the previous section. Because self-regulated learning is embedded more explicitly in the PYP curriculum it appears to have more of a focus in an IB school. However there are a number of elements of self-regulated learning practices and development of independent learning apparent in the published curricula of many of the schools in the study. With regard to the small sample of teachers, there were autonomy supportive teachers in both IB and Non-IB schools in the study. The IB's PYP is a programme, which like any published scheme of work is only words on paper or aims on a website without teachers breathing life into the practices described and teaching the students in their schools. This question highlights again the shift in the focus of the research, as whether the students develop as self-regulated learners is more dependent on the teachers' teaching skills than the curricula that they are following.

A recent study of thirteen PYP schools in Australia by Gough et al (2014) utilised a mixed methods approach with principal, teacher and student questionnaires. One aspect explored was how the PYP affected student motivation and learning. The school principals surveyed believed the PYP had contributed substantially to both

student learning and motivation. Teachers talked of students taking greater responsibility for their learning, students becoming more autonomous and self regulated with 92.8% of the students surveyed stating that they were, "interested and involved in their own learning."

The shift in emphasis makes this question a different question than when the study started. The IB's PYP, through its training and quality control through authorisation and evaluation of schools, develops teachers who teach an inquiry-based approach. The curriculum framework is not prescriptive as to the content taught and therefore the teachers have more responsibility over the units designed for their classes. They also encourage the students to take more responsibility for their own learning and teach them explicitly about strategies and skills. The development of the students' self-regulatory practices is related to their teacher's stance towards autonomy. The PYP provides support and training but in the end it is the individual teacher who leads the students in their care to independence as a learner.

7.3.3 What is the relationship between teachers' approach to student autonomy and the students' autonomy?

The teacher's approach to student autonomy and the teacher-student relationship with regard to the development of self-regulation has become a more significant consideration through the course of this research study. The teacher is vital in developing self-regulated learning and in allowing the student to grow as an independent, autonomous learner. The teacher questionnaire focused on the teacher's stance in relation to the continuum of teacher stance from controlling to

autonomy supportive. Flink, Boggiano and Barratt (1990) examined controlling teachers and described how, in a class with a controlling teacher, the intrinsic motivation and the level of performance of the students both decreased. The motivation of the students is linked to their teacher's approach and support of self-regulated learning. McCombs and Marzano (2010) talked of the students "will" to learn, their motivation to become independent learners. Again the teacher's role in inspiring, engaging and motivating the students' own desire to learn is central. Zimmermann's model of self-regulated learning ability (Schunk and Zimmermann 1997) was socially based and environmentally linked with the teacher playing a key part in this process. At the lower levels of Zimmermann's model, feedback from the teacher was seen as important as supporting student autonomy. The role of the teacher and the student/teacher relationship is essential to the student's development of self-regulatory learning. A number of studies stressed this vital factor. Deci (1991), Larkin (2009), Hattie (2011) and De Jäger, Jansen and Reezigt (2002) all emphasized the importance of the autonomy supportive teacher and how the teacher enhances the intrinsic motivation of the students. Engle and Conant (2002) talked of students being the "authors and producers of knowledge", the ownership of learning belonging to the students. Again the teacher's approach to the students' autonomy is critical here. A controlling teacher would not allow the students to be "authors and producers" and would take more ownership for their students' learning processes and products. Therefore, autonomy supportive teachers are a very important part of the development of self-regulated learning in their students.

The revised Boerkaert's model with its new Emergent self-regulated learning centre also relates to the role of the teacher in introducing, modeling and teaching the skills and strategies needed by the student in order to develop as autonomous, self-regulated learners. Grow (1991) charted the stages the teacher moves through from the centre of the revised Boerkaert's model (Figure 7.5) to the outside layer as from authority coach through motivator and guide to consultant and delegator. The teacher explicitly teaches the skills and strategies required for the student to become more self-regulated acting like a coach. Then as the student becomes more independent the teacher guides and motivates the student in their adoption and practice of these skills and strategies until the teacher withdraws further as they become more of the "guide on the side" as a consultant for the student when required as well as delegating more of the organisational tasks to the students themselves. The skill of the teacher lies in developing the students' readiness for learning and openness to the learning opportunities. The teacher also needs to be able to gauge the individual learner's development, knowing when to encourage and when to let the student lead. This relates to the teacher training and continuous professional development, which is required to support the teacher. The students' own self-awareness as to their effectiveness as learners, their creativity and their abilities to use problem solving are all scaffolded and encouraged by the autonomy supportive teacher. This relates back to Vygotsky (1986) and the social constructivist process, which underpins the pedagogy of the IB's PYP. The autonomy supportive teacher skill in assessing and teaching the students within the zone of proximal development (ZPD) is paramount.

7.3.4 To what extent do different curricula embed the promotion of self-regulated learning and autonomy within them?

The pedagogy and philosophy of individual schools is often located in the school's website or published material. Paris and Winograd (1990) discuss, "environments that allow students to be autonomous." The learning environment, of which the curriculum background is one element, is an important factor in the development of self-regulated learning. This question is also referred to in the next section considering the limitations of the research. The research title focuses on only one aspect, the curriculum. Even when the published curricula materials reference the development of self-regulatory practices are the schools actually implementing them in the classroom? This question relates back to the previous question of the teacher's role in that the self-regulatory practices of a school occur at the teacher/student relationship level. The leadership of the school can promote and encourage these practices but it is only through the teachers' efforts and supportive work in the classroom with the students that autonomous, self-regulated learning can become embedded in the individual school's practice. Lipsky (1980) coined the phrase "street-level bureaucrats" in relation to public service professionals who implement policies yet also make policies through their discretionary actions. A multi-dimensional school system is dependent on the actions of the teachers to deliver the curriculum in line with the culture, values and beliefs promoted by the school. Schools are complex work situations and teachers have to respond to the human dimension of the situation when working with their students and their families. Teachers have a level of professional autonomy in their classrooms and this may or may not match the leadership ethos and school policy. The complexity of the

system in a school and the variety of stakeholders and influences on the learning would require more of an in-depth case study approach than this study has involved.

The next section will focus on the limitations of the research and how the research methods could be improved.

7.4 Limitations of the research

7.4.1 Composition and control of the samples

Through the research process a number of lessons were learnt. One limitation was the composition of the samples collected, as there were four schools where the sample of students was less than ten students. These results were therefore considered more in the data analysis in relation to the IB/Non-IB dichotomy than only referenced as individual schools.

The selection of schools was an opportunistic sample. It would have been better to select certain schools that had been running their curriculum programmes for a certain length of time rather than the wide variety in the sample for this study. It is also difficult to be a lone researcher on an un-funded project.

More control of how the samples were sent and labeled would have aided the statistical correlation of teacher results with their students' results, if the instructions sent to school had specified this. In one school in the study there were four classes and four homeroom teachers and all the questionnaires from the four

classes and the teacher questionnaires were sent as a whole rather than divided into classes.

7.4.2 The student questionnaire

Was a questionnaire the best way to ascertain how self-regulated the students were? It is apparent that there are contributing factors to students' autonomy in the classroom, not least the teacher's stance towards autonomy. It was illuminating to explore the various schools' curricula and to see where self-regulated learning existed in mission statements and in the curriculum documents. Even though the concept of lifelong learning is embedded in the IB curriculum and statements made by the IB schools' support this, is it actually happening in the classroom? In my present school the programme coordinator works closely with each teacher and even then the teachers are at different stages in their development as IB teachers. The expectation is to support inquiry learning where the student can pose questions, which could initiate inquiries. This release of control as to what is taught in the classroom is a pedagogical shift for many teachers and the letting go of control takes time and encouragement.

The quantitative and qualitative data inventories showed that primary age students were developing as self-regulated learners. The development, pilot testing and use of the questionnaire were core parts of the research and a useful tool with which to consider aspects of the key questions. Both the quantitative and qualitative components yielded data, which contributed to the research. Overall, consideration of the data collection process left me with the feeling that more information was

required than could be accessed remotely.

When the student questionnaires were sent to the participating schools, instructions were included as to what to do and a script given to read out to the students. Not having sole control of this process I had to trust the teachers to follow these instructions and I cannot confirm that the instructions were followed as written.
I also had not anticipated that when there were a number of classes at the grade level that I would receive the questionnaires as a whole set without the individual class teacher identified with their students. Therefore some of the data conclusions are more generalised, relating to the school group as a whole, rather than being able to be more specific by relating the individual teacher to the class group as intended.
One of the teachers involved in the study emailed a concern that she believed her students might answer the questions how they thought she wanted. This is always a risk with this approach to data collection. Interestingly this teacher scored as a low moderately autonomy supportive teacher. This teacher-pleasing action on the part of the students manifests itself in some students in primary school and the notion of "desirability" of answers provided was discussed in the last chapter. Harter (1981) created a motivational scale in which one subscale examined students' intrinsic motivation to work for their own satisfaction versus the more extrinsic motivation of working to please the teacher and get good grades. Perhaps the teacher from the study has students who, knowing that their teacher was going to look at their questionnaires, submitted answers that they believed she would want them to give.
Having the questionnaires delivered by the class teacher may not have been the

optimum decision and it may have been better if it had been someone not so connected to the students.

7.4.3 Student interviews

Upon reflection, I did find that it was much easier to see how the teacher supported self-regulatory practices in my observations in one of the IB schools in the survey, where I conducted ten follow-up interviews with students. One limitation of the study is that I only interviewed students in one of the IB schools. Certainly the IB's PYP develops students' self-regulation and independence in learning but other curricula also supports aspects of self-regulated learning. The data shows the development of self-regulated learning in all the schools in the study since 83.5% of the all students surveyed, regardless of curriculum background, scored in the top quartile of the results of the student questionnaire. The results from the teacher questionnaire also demonstrate that autonomy supportive teachers are not only found in IB schools.

7.4.4 Teacher Questionnaire

The Problem in Schools questionnaire, which was completed by the teachers, was helpful in seeing the responses to the scenarios and gauging the teacher's stance with regard to autonomy. The teacher questionnaires were disappointing in some cases as the instructions provided with them clearly requested the teacher to rate each of the Problems in Schools scenarios, though some teachers just rated one of the four possibilities rather than all of them. These questionnaires could therefore not be analysed as fully as was intended. It would have been helpful to have also

included an anonymous biographical information sheet for the teachers involved which would have included their gender, years of teaching and time at their current school. It would have been useful to have asked the teachers involved for more details regarding their training to be a teacher, whether they had been taught about self-regulation in their teacher training and if how to support students in the development of their autonomy as a learner was included in their education syllabi.

7.4.5 Improving the research method

As noted when considering the research questions, it is difficult to know if the individual schools are demonstrating the practices outlined in their websites and published material. The schools' curricula involved in the study varied in published detail and individual schools also vary in the amount of information given especially with regard to self-regulation and autonomy. The schools' websites viewed offered more practical details and subject descriptions than a great deal of information on educational philosophy and pedagogy. Schools' mission statements differed and it took careful reading into all sections of the curriculum documents to find the details relevant to the study.

It would certainly be very helpful to see each teacher in action in his or her school; it is in the interactions between teacher and student in the classroom environment where the development of self-regulation is most visible. However, it is difficult to know if having someone in a class changes the behaviour of the teacher and the students. The teacher may feel under pressure to perform in a certain way, would it then be an authentic lesson? Maybe a more deeply focused study comparing different curricula schools over a period of time with the same researcher observing

would enable the researcher to build up a relationship with the schools, staff and students. Such case study based research may produce more detailed background to the data from the questionnaires.

The data have highlighted more questions for me in the course of this thesis study. At the beginning it appeared to be a simple premise, wondering whether the IB's PYP programme motivated self-regulated learning more than Non-IB PYP curricula, and devising a short questionnaire for students in various schools to complete. Upon examination of the results, there are many factors involved in the answer to the relatively simple thesis questions. (Refer to Representation 7.7 earlier in this chapter). This simple question generated many complexities. The school's curriculum background is not just a matter of knowing which curriculum is being used. It encompasses the ethos of the school, the leadership, the background of the teachers and the students as well as many other cultural and national differences which all impact on the students' learning. With regard to the background of the teachers, one area I would have liked to include was the question of training as a teacher and how much autonomy and self-regulation was part of education programmes in universities and colleges. This is the main question, which emerged for me in the course of this research as a theme for further study and this is explored more in the next chapter.

7.5 Summary

Boerkaert's model of self-regulation was revisited and the layers of the model were related to the research findings and thesis question. A suggestion for adapting Boerkaert's model with relation to younger learners was included and explained. A representation of the development of self-regulated learners in the school context was outlined. The process and product of the research was examined and further questions and areas for continuing research were noted.

The second concluding chapter considers the emergent theme of the importance of the teacher and the consideration of teacher education. The chapter ends with a focus on the curriculum in relation to key skills and competencies that support self-regulated learning. The LEGO® model from the front page of the thesis is explained and a personal reflection ends the thesis.

Chapter 8 Conclusion 2

Teachers, teacher training and the curriculum for motivated, self-regulated autonomous learners

"If the teacher's not on fire- neither are the students".

(Lorraine Munro- IB World magazine 2011)

This final chapter begins with a consideration of the importance of the teacher in the development of students' self-regulatory practices and the implications for teacher training. The purpose of education as the development of self-regulated, autonomous learners is revisited and curricula based on skills and competencies required for the 21st century is outlined with reference to its implementation in schools and the effect on the learner.

8.1 The importance of the teacher

The key questions in the thesis related to the curriculum, specifically the International Baccalaureate's Primary Years Programme (PYP) and whether the PYP facilitates students' motivation toward being self-regulatory autonomous learners. Through the consideration of the quantitative and qualitative data the results indicate that the PYP curriculum includes many practices, which can develop self-regulatory behaviour in the students. However it is the delivery of the curriculum and the vital input of the teachers in motivating the students that is at the heart of the answer.

Published school documentation or written curricula may not include self-regulation and autonomy as specific components. However individual schools and also individual teachers may still champion independence in learning and be more autonomy supportive, regardless of the curriculum documentation. It is at the classroom level where self-regulation develops and autonomy support happens and the relationship between the student and teacher is crucially built. The way in which the teacher sets the classroom environment is pivotal in answering the key questions in this study.

The teacher's role is paramount in the development of students' self-regulated learning. Deci et al (1991) and Engle and Conant (2002) had previously related student motivation to autonomy supportive teachers. Darby (2005) saw the teacher as the determining factor in the students' enjoyment of and engagement in their

learning. Darby (2005) describes instructional and relational dimensions of teaching. The instructional dimension relates to teachers planning, both for understanding as well as for interest and motivation. The relational dimension focuses on the learners and teaching and includes being sensitive to all the students' needs, the positive classroom environment and fostering enthusiasm for learning on the part of the students and the teachers. The autonomy supportive teacher is crucial for the development of student motivation. Sierens et al (2009) found that autonomy support on the part of the teacher cultivates student interest and advances their intrinsic motivation. Richardson (2012) explained how an autonomy supportive teacher could motivate students through topic choice and use of technology, to developing more self-directed research projects.

The question regarding the relationship between student autonomy and teacher autonomy is at the heart of this research. There are many factors involved with regard to the autonomy supportive teacher and the student who is developing their self-regulated practice. These factors were outlined in the previous chapter to demonstrate the complexity of the school context. (Figure 7.7) The teachers' perceptions of and valuing of autonomous learning is also vital. The teacher/student relationship and interaction is set in an environment where there are many variables, which can affect the learning in that school. The curriculum is one part, including the published, written and taught curriculum but also the hidden curriculum. The school culture and the ethos and values that the school promotes are also factors. The leadership of the school is also a determining factor as to how the school is managed and how the staff is inspired to teach and support the

students. Ofsted reports in the UK all emphasise the importance of leadership for effectiveness and developing outstanding schools.

This teacher-student relationship ideally is set in an autonomy-supportive school culture where the school community is committed to the development of independent, self-regulated learners who take responsibility for their learning. The teachers have been trained in ways to teach the necessary skills and strategies and they celebrate their students' learning and chart their growth as independent learners through reporting and conferencing with students and their parents. Teachers in IB schools are encouraged to develop pedagogy, which will support independent, self-regulated learners; but being an autonomy supportive teacher involves a change in stance, a letting go of the control of the class. It is this element that causes some teachers difficulty when working within the PYP curriculum. As Larkin (2009) acknowledged, the role of the teacher in facilitating self- regulation is crucial. Larkin (2009) talks of the teacher providing the supportive environment as well as demonstrating flexibility when designing differentiated tasks to match the individual's developmental level. She describes the teacher in this role as also providing a role model for their students. It is this move as a teacher, a change in lens, a shift from planning the lessons completely and having all the required resources, to a much more potentially scary scenario where the teacher may not know at the beginning of the lesson where the discussion or learning experience may lead. On the other hand this could be seen as an empowering moment where the teacher allows their students to lead the learning, to follow their wonderings and ideas. To do this the teacher has to be secure in their subject and pedagogical

knowledge and classroom management skills.

One teacher I have worked with recently has really embraced the shift in pedagogy and has been a real risk-taker with regard to her students' learning. The unit she was working on with her students was about designers and the students had been able to choose a particular designer to research. The summative assessment involved them in planning and making a product similar to their chosen designer. One student had selected a jewelry designer and wanted to make a necklace with a crystal. This student had an idea, which he expressed to the teacher, that you could use sand to heat up and form a crystal. The teacher was open-minded and expressed her interest in this idea. The student went out in the playground at break time and found some of the pieces he believed would be needed to form this crystal. He told his teacher that they would need to heat it up in an oven "as hot as lava". The teacher had a discussion with her class about this idea and all the students wanted to see what would happen. The teacher recorded the process of the investigation with photographs and the students' thoughts and ideas. At the student's instigation (and with the support of the teacher for the student) the class accompanied the student to the school kitchen where the pieces of sand were shaped into the student's required shape and heated in the oven. The student instructed the teacher that he believed thirty minutes would be sufficient. Unfortunately the sand pieces just got hot but the crystal did not form as the student thought. This teacher action sends a signal to the rest of the class that their ideas are worthy of pursuing and trying out. Even though the idea did not actually work out there were lots of opportunities here to further the whole class' learning about how materials are formed, changes of

state, scientific processes etc. His teacher had allowed this student initiated inquiry to develop, not knowing the conclusion, but understanding the importance of the investigation to the student's development as a learner. The teacher's flexibility and the inquiry environment she had created facilitated this student-initiated inquiry and scaffolded the students' development as self-regulated learners. Lavery (2008) found the highest effect on student learning came from strategies directed towards Zimmermann's (2002) Forethought phase, which includes scaffolding.

Flink, Boggiano and Barnet (1990) looked at teacher stance in their research. As referenced in the previous chapter, controlling teachers decrease the students' motivation. The students are not given any choices by a controlling teacher and are therefore not encouraged to be creative, unlike the student referred to above.
De Jäger, Jansen and Reezigt (2004) explored metacognition in primary schools and highlighted the vital role of the teacher in developing metacognitive strategies in order for the students to learn to be self-regulated learners. They outlined the optimum role of the teacher as autonomy supportive engaging the student in learning and teaching the skills and strategies required to be a lifelong, self-regulated learner. Deci et al (1991) found that autonomy supportive teachers tended to have students who retain their natural curiosity. Rather like the colleague referenced above, her students know that she supports their curiosity and this enhances the students' intrinsic motivation toward their learning.

The pedagogical approach of the teachers working within the Primary Years Programme (PYP) of the International Baccalaureate (IB) requires teachers to adopt

a more autonomy supportive role through its inquiry framework, which embeds the notion of choice for teachers and students within certain parameters. Schools who adopt the PYP encourage and support their teachers to adopt this pedagogical approach, which will support self-regulated learners. Other curricula schools also work towards encouraging the students' growing independence in learning, and in the study from the results of the teacher questionnaire there are autonomy supportive teachers across the schools surveyed both in IB and Non-IB schools.

This continuum of choice and control for the teacher is an interesting dichotomy to explore. In my time in PYP schools I have worked with a number of teachers who have experienced difficulties in adjusting to a different approach to teaching. In the PYP there is less dependence on textbooks and a great deal of the responsibility for resources rests with the teacher as they construct their unit. The development of the student as a self-regulated learner is supported by the element of choice within the unit. The students contribute wonderings and questions, which add to the teacher's planned unit. The teacher builds choices for research, maybe a choice of subject or area of research. The student, from a range of options, could select the format for the final presentation. The teacher plans and organises the unit as well as responding to and supporting individual learning needs. It is also in the ethos of the individual classroom where an autonomy supportive teacher provides that safe environment for the students to explore their own ideas. Darby (2005) referenced the nurturing, supportive environment necessary for students to develop autonomy. She also concluded from her research into science teaching that if the teacher was passionate about the subject, if they were "on fire", students learned more

effectively. Darby (2005) also highlighted the pivotal influence of the teacher with regard to student engagement. The autonomy supportive teacher models self-regulatory practices for their students. They can also demonstrate how failures and mistakes can lead to learning. The teacher's passion and excitement for their subject can be infectious increasing motivation to learn for their students. If the students are excited to learn they will try out new strategies and experiment with their ideas more independently when they have the optimal environment created by their teacher.

The teacher, rather than the curriculum has become my focus through the journey of this research. If we require students to become self-regulated, autonomous learners we require autonomy supportive teachers who have received training in how to encourage autonomy in their students. Through the study it became evident that regardless of curricula, the role of the teacher is the most important factor in the development of the students' self-regulatory learning practices.

The next section focuses on teacher training with relation to the development of self-regulated learning and a consideration as to whether teachers are prepared to be autonomy supportive teachers.

8.2 Teacher Training- a further question for research

As mentioned in chapter six, the teacher's background and education would have been useful information to collect to further inform this research. My analysis of the research data led me to thinking about the role of the teacher and in relation to the

teacher's role I was steered towards the consideration of how teachers are trained. I asked some of the staff in the IB school where I conducted the follow-up student interviews with regard to self-regulation about their training as a teacher. I also posted a question to one of my LinkedIn groups asking if the teachers had had self-regulated learning included in their teacher training courses.

One of the teachers I spoke to felt she had learnt more about self-regulation in students through a Masters in School Counseling, which focused on the holistic development of students. She felt that she would have liked to be more prepared for scaffolding self-regulatory practices in her years of teacher training. Another colleague had been trained in the Montessori teaching philosophy and found that independent learning, including self-regulation and lifelong learning were all integral to the Montessori programme, which supported her in her introduction to the IB's PYP.

The responses on LinkedIn were interesting. One of the teachers explained how he had found it difficult to be in an IB school and expressed the difficultly of letting go of the control in teaching inquiry. He also was of the opinion that it was harder for new teachers who had been trained in one system to have the experience to adjust to the way of inquiry. Another teacher posted her feeling that she had had some training in developing independent learners. She related her confidence to her training but also from her descriptions it appeared that she was at a school that had support for teachers developing inquiry, as she charted the practices in place in the school. She talked of keeping a balance between expository, discursive, investigative

and exploratory learning, conferring individually with each child at least once a week and having the students setting goals and giving each other feedback on their goals. Assessment and feedback was key in the school's practice, involving the children and encouraging them to answer their own questions and direct their own learning. Another teacher reflected that he had found difficultly, when completing his Masters course in finding professors with enough background knowledge and expertise in the field of student-centred classrooms and self-regulated learning to guide him.

One teacher I spoke to at the school where I conducted the follow-up interviews reflected that their training as a teacher had involved some consideration of lifelong learning and the creation of interest in learning to promote "excitement and growth." She commented that the notion of self-regulation, independent learning or lifelong learning was not a large part of her training.

These comments piqued my interest further and I researched a number of teacher training institutions to see if their course outlines detailed any inclusion of self-regulated, independent or autonomous learning. I only found one PGCE course, which specifically included engagement in, "developing creative and critical thinking that facilitates autonomous and collaborative learning." Similarly to the school websites, it is difficult to know if aspects of self-regulation may be taught to teacher training students but this aspect of their syllabi is not always evident on their websites despite what may be in the course documentation. I feel that self-regulation and the development of autonomous learners should be a central part of teacher training for all.

I would like to discover more information regarding the training of teachers to support their students' development as self-regulated, autonomous learners. Continuing professional development and support for the teachers within schools is also of interest to me in relation to the teachers' development of autonomy support. Niemi (2002) discussed the importance of active learning in teacher education and schools. Active learning is a similar idea to self-regulated learning as it focuses on:

> "A learner's active impact on learning and a learner's involvement in the learning process."
>
> Niemi (2002) p.764

Lunenberg and Korthagen (2003) promoted a shift from teacher educator directed learning to student directed learning within teacher training. They saw a need for more constructivist practices. The way teacher trainers instruct their trainees needs to reflect the strategies required for the student teachers to employ with their classes. Teacher trainers need to engage their students in ways that support the teaching students self-regulatory practices if we want teachers to teach in a more autonomy supportive way.

Howe (2006) researched teacher induction across a number of countries and found that Japan, Germany and New Zealand possessed effective teacher induction policies. The use of expert teacher mentors and reduced teaching schedules for new teachers, as well as on-going professional development was seen as critical to the success of these programmes. However, the vital component is the teacher mentor and Howe (2006) does include the fact that the mentor teachers rarely have any special training or qualifications, which indicates an area for further research.

Vrieling et al (2010) explored design principles for promoting self-regulated learning in primary teacher education. Student teachers are expected to be self-regulated in their training. Social constructivist learning theories in education have become more of a focus in recent years. Vygotsky's (1986) notion of learners constructing their own meaning and understanding are lifelong learning skills that are required for self-regulation. Teacher education focused previously more on the teaching of knowledge and teaching skills. Now teacher trainers aim to make their teaching students more self-regulated and take responsibility for their own learning. An active, collaborative learning environment for student teachers is required. Vrieling et al (2010) saw the real responsibility and ownership of learning as belonging to the student teachers. Different teaching methods require more facilitation, less sage on the stage more of a guide on the side. Therefore there are new demands on teacher education. Teachers involved in the study criticised their training as involving too passive teaching and learning methods. The study was focused on Finnish teachers but there are relevant findings for all. The study concludes with a call for strong cultural change from outer regulated learning to self-regulated learning for student teachers.

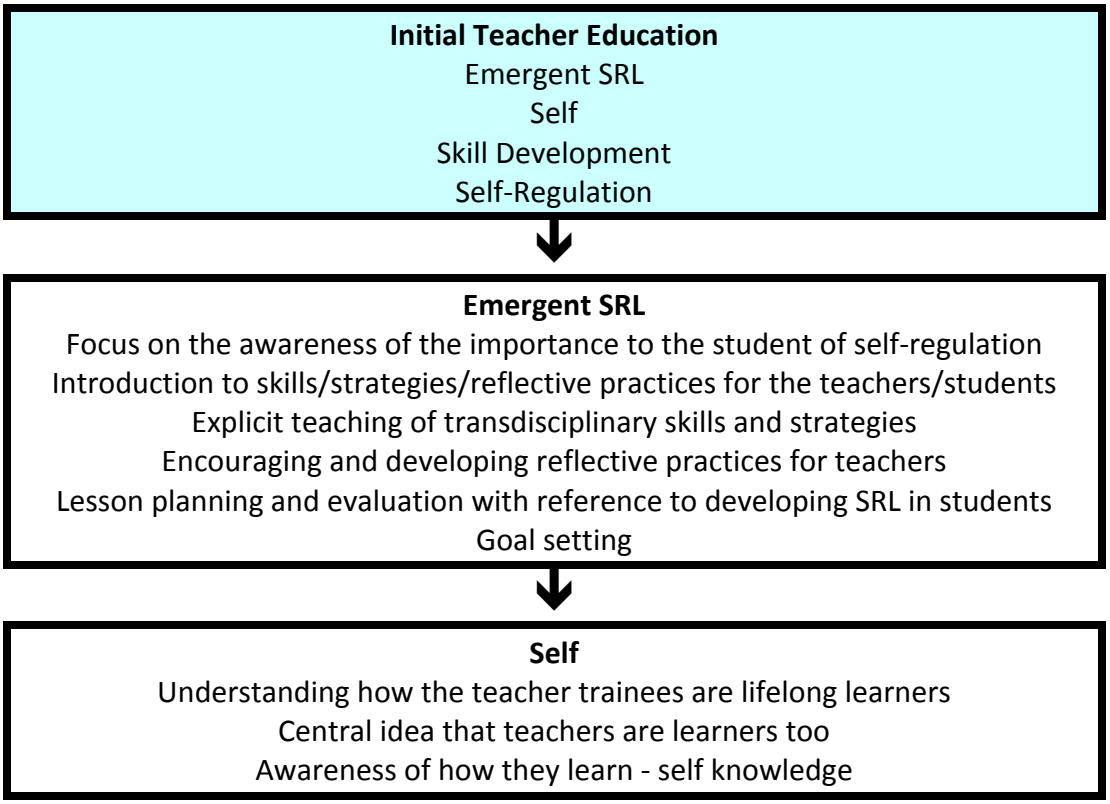
From discussion with colleagues who work on Initial Teacher Training (ITT) programmes and from looking at programme curricula, there seems to be very little explicit reference to self-regulated learning. If teacher-training courses are to support new teachers in developing self-regulated autonomous learners then the courses should include this area in their syllabi. Though it is important that the teachers believe in the importance of the development of self-regulatory learning for

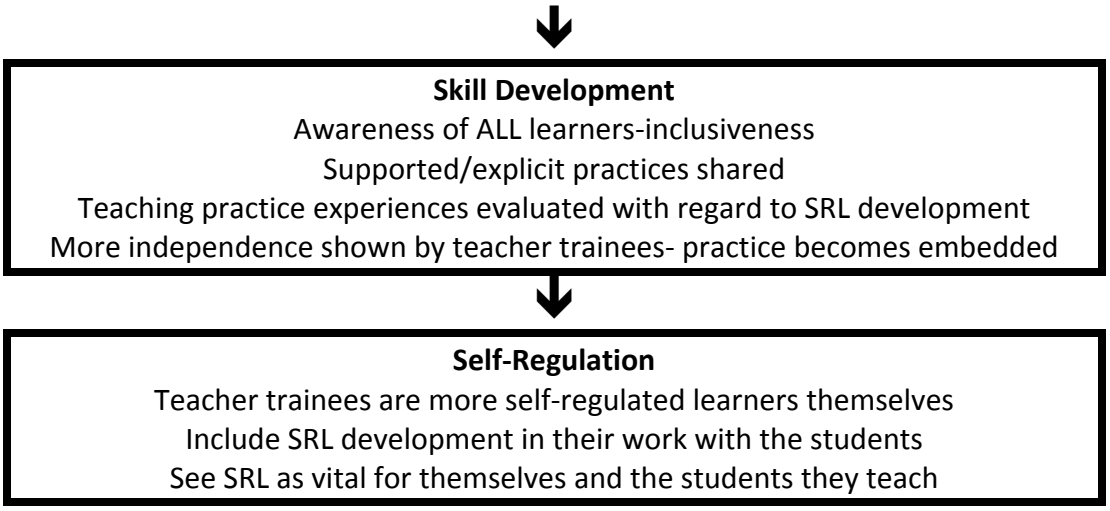
their students, individual teachers have different models of teaching and this will influence whether they actually buy into the idea of self-regulation in the first place. A teacher will not see self-regulation as relevant if they believe in the "empty vessel" view of teaching.

Developing independent autonomous learners is at the heart of education and teacher-training courses need to make self-regulatory teaching practices more explicit in their course descriptions and at the heart of the teacher trainer pedagogy.

I would like to suggest using the revised Boerkaert's model (p.190) to frame the self-regulation strand in initial teacher training (ITT), see Fig. 8.1 below.

Fig 8.1 Boerkaert's adapted model framing initial teacher education





Particularly in the UK, there is a recent focus on "maths mastery" specifically and mastery more generally across the curriculum of primary schools. However, there is no clear and agreed definition of what this means. Perhaps an incorporation of self-regulated learning into the thinking and working of teachers in ITT would go a little way to providing clarity in this area as well?

8.3 Revisiting the purpose of Education

Early on in the thesis, in justification of my area for research focus, I stated that self-regulated, autonomous learning is a goal of education. Biesta (2009) called for educators to reconnect to the question of the purpose for education, as he believed that everyone is too concerned with testing and educational measurement. He cited the focus on various international measures such as PISA testing as evidence. This concentration on educational measurement has led educators to concentrate on students performing well on these tests, and not to question what is of value in education or the purpose of education. As Biesta (2009) states, education should be about more than measureable facts on pen and paper tests. Where does this place

the teacher in regard to their passion for teaching students? If as a teacher you were just teaching to the test you would not be “on fire” as Lorraine Munro states in the quote at the start of this chapter. The role of the teacher in recent years has seen a shift towards the “guide on the side” rather than the “sage on the stage”. But what is the purpose of education? According to Biesta (2009) it is socialisation and qualification with what he calls “subjectification”, which is explained as a process allowing,

> “Those educated to become more autonomous and independent in their thinking and acting.”
>
> (Biesta (2009) p. 8.)

The IB’s mission of preparing students to be lifelong learners fits into the area of subjectification. Leading the students to develop as independent, self-regulated learners allows the individual to learn how to learn and also through regular reflection enables them to learn about themselves as learners. The skills and strategies taught to develop an individual student’s motivation towards self-regulated, autonomous learning may not be measurable in traditional ways but a learner’s progress may be charted through their education. The students in primary schools now are being educated for employment opportunities that do not exist as yet. The focus on education as fact gathering, knowledge based curricula is shifting; as there is a realisation that students need to develop a different group of skills for the future.

8.4 Further study-The importance of self-regulated learning

Self-regulated learners are the goal of educators. IB teachers aim for students to be self-motivated to want to learn and strive to give the students in their care the skills to continue learning for the rest of their lives. The IB education framework is not a knowledge-based curriculum but is a curriculum framework based on the acquisition of skills rather than facts. Other Non-IB curricula models, such as the UK National Curriculum, South African and Nigerian curricula are still more test-based and focused on the knowledge of facts. A curriculum based on skills is more adaptable to changes than a fixed knowledge-based curriculum. A self-regulated, autonomous learner would be prepared for a fast-changing world of employment.

Much of the discussion and research into self-regulation focuses on older students, I believe that we need to focus on the younger learner and develop these skills and competencies from an earlier age as discussed in the suggestion for an Emergent Self-Regulation centre in Boerkaert's model of self-regulation in the previous chapter.

The idea of 21st century competencies has been discussed and outlined by different countries and research bodies. The focus of these competencies are not knowledge or fact based, they are skills, some of them considered the "soft" skills.

Finegold and Notabartolo (2010) suggested a list of fifteen key competencies. A curriculum, which would develop self-regulated learners, could include these competencies and skills.

In the table below, I have taken Finegold and Notabartolo's competencies and related them to aspects from the PYP curriculum.

Table 8.1 21st C. Competencies and the PYP Curriculum

21st C. Competencies	IB PYP	Comment
Creativity/innovation	Students ideas and wonderings are encouraged and acted upon	Choice and time to explore are vital
Critical thinking	Encouraged and developed	Discussion and debate are important
Information literacy	Included in the Language scope and sequence	Text includes digital
Problem solving	Strategies for problem solving taught and practised	Open ended challenges set
Decision making	Elements of choice for the individual as well as group decision making	Part of organisational skill development
Flexibility and adaptability	Embedded in international mindedness and the variation available across the framework	Important for the teacher and the student
Learning to learn	Transdisciplinary skills taught across the curriculum	Explicitly and implicitly taught
Research and inquiry	An inquiry based programme- research is one of the transdisciplinary skills	Teachers role modeling research- teaching as action research?
Communication	Another transdisciplinary skill and one of the learner Profile attributes	Language central to the curriculum
Initiative and self direction	Choice is an important part of the programme	Reflection and self-assessment support this
Productivity	Goal setting is part of the programme- students also learn organisational skills- (transdisciplinary skill)	An effective self-regulated learner will be productive
Leadership and responsibility	Part of the self management transdisciplinary skills involves working with other and taking responsibility	Opportunities for student to initiate their own inquiries and to take action
Collaboration	Teachers and students across a PYP school collaborate with each other	Also could extend out to other learning communities
Digital Citizenship	Technology tools are integrated within the learning for the units	Students are required to be competent users of technology
Media literacy	Part of the Language curriculum students have Viewing and Presenting as one of the strands	Developing confidence with use of a variety of media.

It can be seen from the figure above (Table 8.1) that the IB's PYP curriculum

framework addresses the 21st century skill competencies. The PYP focus was highlighted with regard to the title of the thesis, other curricula also include aspects of these 21st century competencies. Considering the proposal for a revised Boerkaert's model these 21st century skills can be introduced, modeled and explicitly taught from the early years. The discussion returns again to the schools and the individual teacher, their training and on-going support to be autonomy supportive and to develop self-regulation through these 21st century skills which will be desirable for future employment.

Recently I have become interested in the LEGO® Learning manifesto and the use of LEGO® Education materials to enhance the curriculum. The LEGO® system for learning uses the four Cs.

Table 8.2 LEGO®- The four Cs

Connect	This phase awakens students' curiosity and the desire to learn Teachers introduce a new unit and connect the students to the subject
Construct	This phase encourages the student to tackle challenges by building something functional or meaningful to them. Students construct meaning in their unit of study
Contemplate	This phase involves reflection and dialogue with the teacher and other students and utilises assessment as part of the learning process. Students reflect and are assessed at the culmination of a unit
Continue	This phase gives students opportunities to apply newly acquired knowledge to new challenges and to take ownership of their learning. In the PYP the aim is for students to initiate action and to continue to connect the learning in the unit to other learning

Highlight shows connection to PYP units

These are phases that students move through in the PYP inquiry process also. Connecting, constructing, contemplating and continuing all relate to the inquiry cycle, which each unit moves through in the classroom. In relation to self-regulation the students are supported and scaffolded through the process of inquiry. The process moves through initial teacher provocations and questions to student initiated questions and student- initiated inquiries and action. LEGO Education kits are used to enable students to explore more abstract ideas and to make them more concrete by building a model. For example the ten and eleven year olds were working on a unit about human rights and were set a task in groups of building each of the forty-two UN Rights of the Child. This engaged the students in having to understand what each right meant to build a model to represent it. The students were then asked to rewrite the statement in their own words.

The LEGO® research paper, "The Future of Learning", is also relevant in the discussion relating to the curriculum and in the focus on self-regulation. The first 21st century competency referenced in Figure 7.1 is creativity and innovation, which is the focus of this LEGO® research paper as well. The LEGO® motto- "play well"- is added to with regards to education to include "learn well". This focus on the creative, motivating, playful learning experience is seen as a core for future learning and is related to the need for students to develop their creativity and innovation for new employment challenges when they leave school. Lifelong learning is also referenced in the research paper including the aim for everyone to continue playfully learning throughout his or her life.

I will end this thesis with a personal reflection on the thesis journey and what is next for my journey.

8.5 A Personal view of the thesis journey

I began this thesis reflecting on myself as a learner and as a teacher and now I can reflect on my latest role as Head of the Academic Programmes at an International School in Europe. I understand where this interest in self-regulated learning stems from now and I know I want to inspire the teachers I am leading to support the students in their own self-regulated learning journeys.

It was really fascinating to start with the curriculum and to develop a questionnaire to see if the students at the top end of the primary school were developing self-regulatory practices. It seemed a simple plan initially, design and pilot a student questionnaire, send out a quantity of these questionnaires to ten and eleven year olds and find out if they were exhibiting self-regulatory practices. All I needed to do was to have a mix of IB and Non-IB schools and then I could compare the results. Then, as I was interested in the role of the teacher as well I decided to include a questionnaire for them. After considering the teacher it became apparent that the background of the school was also a factor. This seemingly simple research was getting more complex.

Once I started looking into the schools websites and curricula material the research became even more complicated. There are so many factors involved in the development of self-regulated learning from the individual teacher/student interactions, to the leadership and ethos of the school. The curriculum is a large factor but it is the way that the curriculum is taught that is not seen at a distance. School websites can show part of what is happening at a school, or be totally

different to the reality. You can perceive a sense of what is happening at the school from a website, but again it is not the whole picture.

It is the interactions between teacher and student that have emerged as the central focus from this research into curriculum. It is the individual teacher who guides the students on their learning journeys to be lifelong, autonomous learners. Teacher training implications as well as continuing professional development is also a key factor from the research. I was also heartened that so many of the students in the survey were excited by their learning as I believe that motivation is also a major component of this study and in education generally.

If I reflect on myself as a self-regulated learner I would say that I have always loved learning from an early age. I always have read voraciously and now enjoy reading about learning, life and technology. I believe I have developed my own self-regulatory practices through the discipline of writing this thesis and I hope to continue writing about education as I strongly believe that we can change the learning experience for all students by empowering students through choice and reflection to pursue their own interests and chart their course through their own learning journeys.

I am involved in an action research project on the pedagogy of play this academic year and look forward to working with the teachers on developing our curriculum to be engaging, relevant and supportive of students' self- regulation development. In this playful spirit I have replicated the representation in Figure 7.7 in the previous chapter with LEGO® bricks to demonstrate the key conclusions of my study. The

photo from the front of this thesis shows the model. Rather like the students in my current school I used LEGO materials to make the complex ideas of my thesis more concrete in a model of self-regulation.

8.6 LEGO® model of the thesis

Explanation:

At the heart of the model is the relationship between the student and the teacher. The teacher supports the student lifting her up- the student is holding the tools that the teacher has taught her to use (skills and strategies).

To the student's left is a wand because learning can be magical and to the student's right is a mirror so the student can be self-reflective. The teacher wears a wizard's hat - as a good teacher often has a touch of the wizard about them.

The teacher has flames around her/her to represent teaching with passion and reflecting the Lorraine Munro quote on page 211.

Behind the teacher is a large toolbox representing all the aspects of teaching- which the teacher has gained from training and experience- curriculum scope and sequences, the units, transdisciplinary skills, teaching resources, different hats for the different roles that the teacher plays (facilitator, guide, mentor, counselor, coach, supporter, role model, planner etc.)

In front of the student is the tree of knowledge (about themselves and their learning) which the teacher enables the student to access.

At the front of the toolbox is 4C to represent the LEGO® four C's (connect, construct, contemplate, continue). The model has four pillars, which represent four important aspects of self-regulated learning. On the left side is another C for collaborative curriculum, which path leads to 21, which represents 21st century skills and stands for the collaborative work on the curriculum that will develop the required skills for the future.
On the right is the letter E, which stands for the learning environment and this path leads to AL for autonomous learning the goal of education. The supportive, engaging and playful environment will enable the student to feel safe to explore their creativity and develop their new ideas.

8.7 And finally….

Whether or not students develop as autonomous self-regulated learners is not a consequence entirely of the curriculum they experience but more because of how their individual teachers implement it. We should be looking at education in the future and how teacher education and ongoing support in the classroom is developed where those crucial interactions are occurring between students and their teachers.

Returning at last to the quote at the beginning of this chapter, I had the privilege of hearing Ms. Munro address an education conference I attended many years ago and was recently reminded of her insights into motivation in an article in the IB World magazine. Ms. Munro is a principal of a successful high school in a difficult area of New York. The passion for teaching that the teachers possess affects their teaching. Those teachers who are "on fire", burn with enthusiasm and are excited by teaching. They are those "affectful teachers" referenced by one of the students in the study when completing the sentence starter, "Learning is..." Another student I interviewed stated that they learn new things, "because of the teacher." Lorraine Munro talks of the teachers in her school bringing their interests outside of school into their classrooms, to fire up the teacher's enthusiasm for learning in order for the passion and fire to be transferred to their students to motivate their own passion and enthusiasm for learning. It is the effect of the teacher, who ignites the students' development as self-regulated, autonomous learners and it is this student/ teacher interaction that is vital and the teacher who is the key.

8.8 Summary

The importance of the teacher in developing students' motivation in becoming self-regulated learning was stressed. Teacher training was considered with regard to teachers being trained in being autonomy supportive. The curriculum of the future in relation to self-regulation was outlined.

A personal view of the thesis was included and the LEGO® model on the cover page of the thesis was explained. The chapter concluded with a final return to the Munro (2011) quote regarding the passion of the teacher.

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APPENDICES:

Appendix A:

Appendix A.1 Student Questionnaire

Appendix A.2 Student Questionnaire- Information for Teachers

Appendix B:

Appendix B: Teacher Questionnaire -The Problems in Schools Questionnaire (PIS)

Appendix C:

Appendix C1: Schools consent form

Appendix C2: Parental consent form- student interview

Appendix D:

Appendix D: Student interview transcript

Appendix E: Data Charts

Appendix E1: Student questionnaire: Data by question

Appendix E2: Student questionnaire: Data by gender

Appendix E3: Student questionnaire: Data by curriculum IB/Non-IB

Appendix F: Tag Crowd

Appendix F1: Sentence starter 1: IB students

Appendix F2: Sentence starter 1: Non-IB students

Appendix G: Negative statements

Appendix H: PYP Overview

Appendix A.1 Student Questionnaire

Questionnaire _____

Date:_____ Age:_____ years Girl or Boy? _____

Nationality:_____ Number of years in this school :_____

Please circle the answer that is right for you

1. **I enjoy my homework**

   Very true Sort of true Not very true Not at all true

2. **I want to learn new things**

   Very true Sort of true Not very true Not at all true

3. **I enjoy discussing ideas in groups**

   Very true Sort of true Not very true Not at all true

4. **I like answering hard questions in class**

   Very true Sort of true Not very true Not at all true

5. **I want my teachers to think I am a good student**

   Very true Sort of true Not very true Not at all true

6. **I feel happy when I do well in school**

   Very true Sort of true Not very true Not at all true

7. **I think about my work to help me improve in the future**

   Very true Sort of true Not very true Not at all true

8. **I set myself learning goals**

   Very true Sort of true Not very true Not at all true

9. I am a responsible student

Very true Sort of true Not very true Not at all true

10. I feel I am able to work on my own

Very true Sort of true Not very true Not at all true

11. I have learnt new skills and strategies to help me learn

Very true Sort of true Not very true Not at all true

12. I am excited about learning

Very true Sort of true Not very true Not at all true

Please complete these sentences:

Learning is
_____
_____
_____
_____

I would like to know more about
_____
_____
_____
_____

Thank you for completing this questionnaire ☺

Appendix A.2 Student Questionnaire
Information for Teachers

Thank you for giving this questionnaire.

Please keep strictly to the text below and do not give any help to the students with their answers to the questions. The students need to have a book to read in case they finish quickly.

SAY:

This questionnaire is for a teacher who is doing some research into students' learning.

Please read the questionnaire carefully and circle the answer that matches your feeling about the statement given.

At the end of the questionnaire there are two sentence starters for you to complete.

I will read the questionnaire through once before you start.

If you need help with filling in the box at the top of the paper I can help you with any questions you have before we start.

Please be silent while everyone completes the questionnaire.
If you finish early you may read a book quietly.

If students do not understand a question you may read the question to the student. If there are students with any learning difficulties the form may be scribed by an adult or translated into another language if required.

Please complete the Problems in Schools Questionnaire and return teachers' and students' questionnaires to Sue Oates at: Postal address given or scan and email to: (email address provided)

Appendix B: Teacher Questionnaire

The Problems in Schools Questionnaire (PIS)

On the following pages you will find a series of vignettes. Each one describes an incident and then lists four ways of responding to the situation. Please read each vignette and then consider each response in turn. Think about each response option in terms of how appropriate you consider it to be as a means of dealing with the problem described in the vignette. You might consider the option to be "perfect," in other words, "extremely appropriate" in which case you would respond with the number 7. You might consider the response highly inappropriate, in which case would respond with the number 1. If you find the option reasonable you would select some number between 1 and 7. So think about each option and rate it on the scale shown below. Please rate each of the four options for each vignette. There are eight vignettes with four options for each.

There are no right or wrong ratings on these items. People's styles differ, and we are simply interested in what you consider appropriate given your own style.

Some of the stories ask what you would do as a teacher. Others ask you to respond as if you were giving advice to another teacher or to a parent. Some ask you to respond as if you were the parent. If you are not a parent, simply imagine what it would be like for you in that situation.

Please respond to each of the 32 items using the following scale.

1	2	3	4	5	6	7
very inappropriate			moderately appropriate			very appropriate

A. Jim is an average student who has been working at grade level. During the past two weeks he has appeared listless and has not been participating during reading group. The work he does is accurate but he has not been completing assignments. A phone conversation with his mother revealed no useful information. The most appropriate thing for Jim's teacher to do is:

1. She should impress upon him the importance of finishing his assignments since he needs to learn this material for his own good.

2. Let him know that he doesn't have to finish all of his work now and see if she can help him work out the cause of the listlessness.

3. Make him stay after school until that day's assignments are done.

4. Let him see how he compares with the other children in terms of his assignments and encourage him to catch up with the others.

B. At a parent conference last night, Mr. and Mrs. Greene were told that their daughter Sarah has made more progress than expected since the time of the last conference. All agree that they hope she continues to improve so that she does not have to repeat the grade (which the Greene's have been kind of expecting since the last report card). As a result of the conference, the Greenes decide to:

5. Increase her allowance and promise her a ten-speed if she continues to improve.

6. Tell her that she's now doing as well as many of the other children in her class.

7. Tell her about the report, letting her know that they're aware of her increased independence in school and at home.

8. Continue to emphasize that she has to work hard to get better grades.

C. Donny loses his temper a lot and has a way of agitating other children. He doesn't respond well to what you tell him to do and you're concerned that he won't learn the social skills he needs. The best thing for you to do with him is:

9. Emphasize how important it is for him to "control himself" in order to succeed in school and in other situations.

10. Put him in a special class, which has the structure and reward contingencies, which he needs.

11. Help him see how other children behave in these various situations and praise him for doing the same.

12. Realize that Donny is probably not getting the attention he needs and start being more responsive to him.

D. Your son is one of the better players on his junior soccer team, which has been winning most of its games. However, you are concerned because he just told you he failed his unit spelling test and will have to retake it the day after tomorrow. You decide that the best thing to do is:

13. Ask him to talk about how he plans to handle the situation.

14. Tell him he probably ought to decide to forego tomorrow's game so he can catch up in spelling.

15. See if others are in the same predicament and suggest he do as much preparation as the others.

16. Make him miss tomorrow's game to study; soccer has been interfering too much with his schoolwork.

E. The Rangers spelling group has been having trouble all year. How could Miss Wilson best help the Rangers?

17. Have regular spelling bees so that Rangers will be motivated to do as well as the other groups.

18. Make them drill more and give them special privileges for improvements.

19. Have each child keep a spelling chart and emphasize how important it is to have a good chart.

20. Help the group devise ways of learning the words together (skits, games, and so on).

F. In your class is a girl named Margy who has been the butt of jokes for years. She is quiet and usually alone. In spite of the efforts of previous teachers, Margy has not been accepted by the other children. Your wisdom would guide you to:

21. Prod her into interactions and provide her with much praise for any social initiative.

22. Talk to her and emphasize that she should make friends so she'll be happier.

23. Invite her to talk about her relations with the other kids, and encourage her to take small steps when she's ready.

24. Encourage her to observe how other children relate and to join in with them

G. For the past few weeks things have been disappearing from the teacher's desk and lunch money has been taken from some of the children's desks. Today Marvin was seen by the teacher taking a silver dollar paperweight from her desk. The teacher phoned Marvin's mother and spoke to her about this incident. Although the teacher suspects that Marvin has been responsible for the other thefts, she mentioned only the one and assured the

mother that she'll keep a close eye on Marvin. The best thing for the mother to do is:

25. Talk to him about the consequences of stealing and what it would mean in relation to the other kids.

26. Talk to him about it, expressing her confidence in him and attempting to understand why he did it.

27. Give him a good scolding; stealing is something which cannot be tolerated and he has to learn that.

28. Emphasize that it was wrong and have him apologize to the teacher and promise not to do it again.

H. Your child has been getting average grades, and you'd like to see her improve. A useful approach might be to:

29. Encourage her to talk about her report card and what it means for her.

30. Go over the report card with her; point out where she stands in the class.

31. Stress that she should do better; she'll never get into college with grades like these.

32. Offer her a dollar for every A and 50 cents for every B on future report cards.

Appendix C1: Schools consent form

Sue Oates
Head of School
Address
Telephone number
Email address

Doctoral Thesis Title:

Does the International Baccalaureate's Primary Years Programme develop students' motivation toward self-regulatory autonomous learning?

Thank you for agreeing for your ten and eleven year olds and their teacher/s to take part in the questionnaires. A signed agreement is required for my records.

Confidentiality
If results of this study are published or presented, individual names and other personally identifiable information will not be used.

To minimize the risks to confidentiality all records are assigned letters and numbers and names are not used except for identifying the schools by country and curricula.

Questions
If you have any questions about this research, please feel free to contact me my contact details are at the top of this sheet.

CONSENT

You may keep a copy of this consent form for your own records.

To confirm your students' and teacher/s' participation in this survey, please sign and date below.

_____
School's Name *(please print)*

_____ _____
Administrator's Signature Date

Appendix C2: Parental consent form- student interview
DATE

Dear Parents,

I would like to interview your child with regard to their thoughts about how they learn best. The interview will be short, looking at four statements regarding learning and obtaining your child's opinion of each. The student then writes their own statement and explains it.

I would like to use the information from this short interview as part of a discussion in my doctoral thesis looking at independent learning. If you are happy for me to interview your child and use your child's comments please sign and return this form for my records.

The interviews are transcribed and individuals are not named in the research paper.

If you have any queries please do not hesitate to contact me.

Warmest wishes,

Sue Oates

Student name:_____

I give permission for anonymised statements by my child to be used for purposes of research.

Parent name:_____

Signed:_____
Date:_____

Appendix D: Transcript of student interview

IS8 – Interview March 2014

Me: It says Students learn easily when their brains are ready

IS8: Well it could be true but when I was with my little brother I would teach him how to read. But he wasn't exactly ready so its not always true. Some people still learn when they are not ready

Me: The second one says Students learn when they're given the chance to experiment and use equipment.

IS8: Well I think for me I do learn better when I'm doing it or speaking it. For a language then I learn it more quickly. In Danish we write and speak and in French we write and speak I know a bit of it.

Me: What about experimenting in science or doing something practical?

IS8: You learn better because it's more fun and the students want to do it so they learn from what they do like when they make mini explosions.

Me: Number 3 Students learn when they start to think about what other people are saying.

IS8: Maybe, it depends from what type of person you are. Some people learn faster when they see an image and can memorise it. For some people its when they hear something, like NAME or NAME actually, when he reads the facts he memorises it.

Me: what about when you work in a group and you're discussing something in a group, how does that work?

IS8: Everyone has a turn to say something and usually the students in the group remember what they say 'cos usually we would have to tell the teacher after we're done.

Me: Number 4 Students learn when teachers stand in front of the class and tell them things.

IS8: Sometimes- but some people might get bored and if a teacher did that all the time.

Me: Would people like that, if a teacher talked all the time?

IS8: No 'cos we don't get to do anything and some people might fall asleep.

Me: I have other students' suggestions (Reads all of them) Any thoughts about

those? Any of those similar to what you think?

IS8: I like (Students learn better when they are not forced to learn it one way)

Me: Would you like to write one? Students learn when…..

IS8: Students learn when they explore and investigate the unit in a fun way while understanding what the teacher is talking about.

Me: Can you give an example?

IS8: Like doing science like the mini explosions- we have to know what the equipment is and how to use it safely so we learn it's the hydrogen.

Me: Thanks!

APPENDIX E1: Student questionnaire: Data by question

As outlined in Chapter 3 this questionnaire was developed using a four-point Likert scale comprising twelve "I" statements relating to various aspects of self-regulation and autonomous learning, which if all were Very True would indicate that the student had developed a high level of self-regulation.

These "I" statements were:

Q1: I enjoy my homework

Q2: I want to learn new things

Q3: I enjoy discussing ideas in groups

Q4: I like answering hard questions in class

Q5: I want my teachers to think I am a good student

Q6: I feel happy when I do well in school

Q7: I think about my work to help me improve in the future

Q8: I set myself learning goals

Q9: I am a responsible student

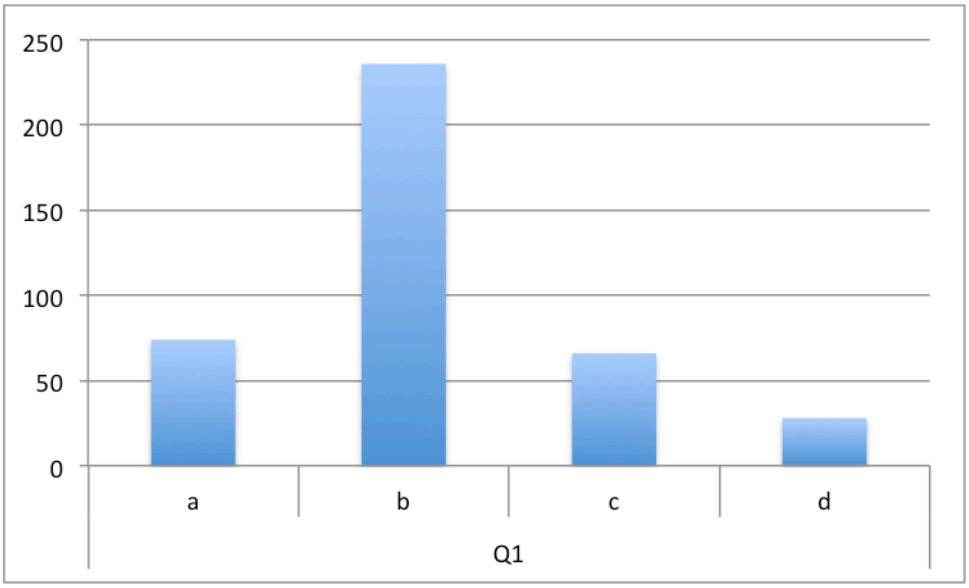
Q10: I feel I am able to work on my own

Q11: I have learnt new skills and strategies to help me learn

Q12: I am excited about learning

The students' choice of answers were: - Very True, Sort Of True, Not Very True or Not At All True. On the graphs that follow overall percentages of answers are shown.

a/1= Very True, b/2=Sort of True, c/3= Not Very True and d/4=Not at all True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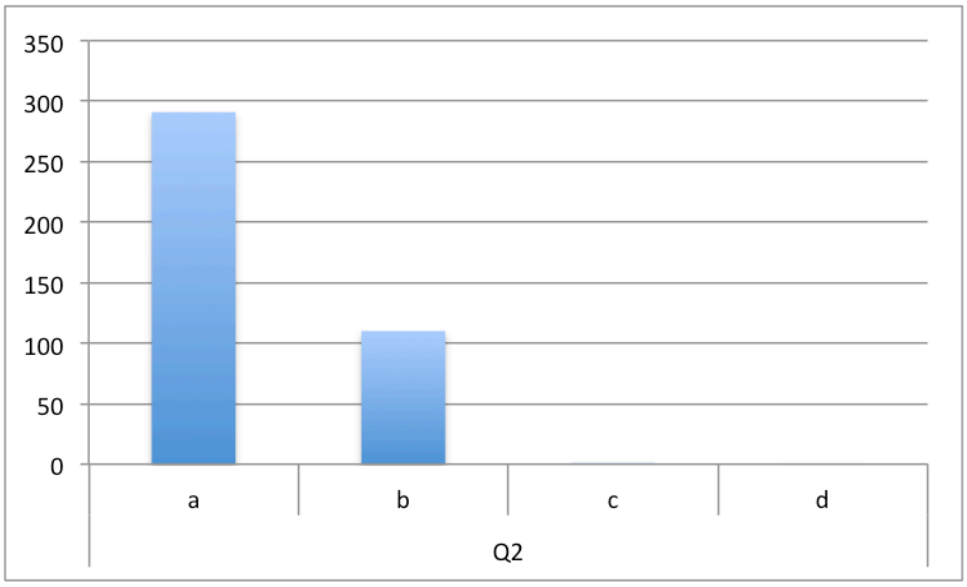
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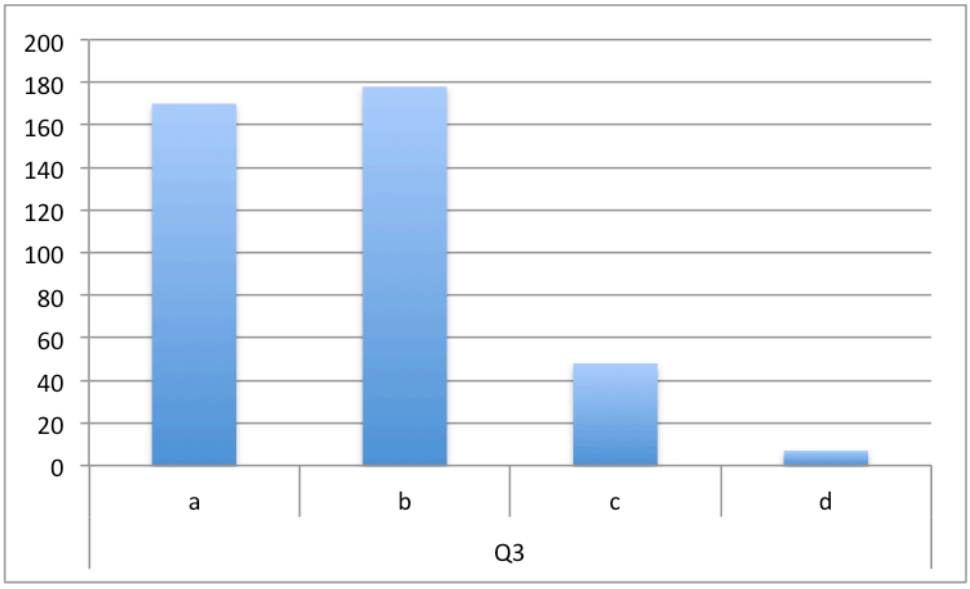
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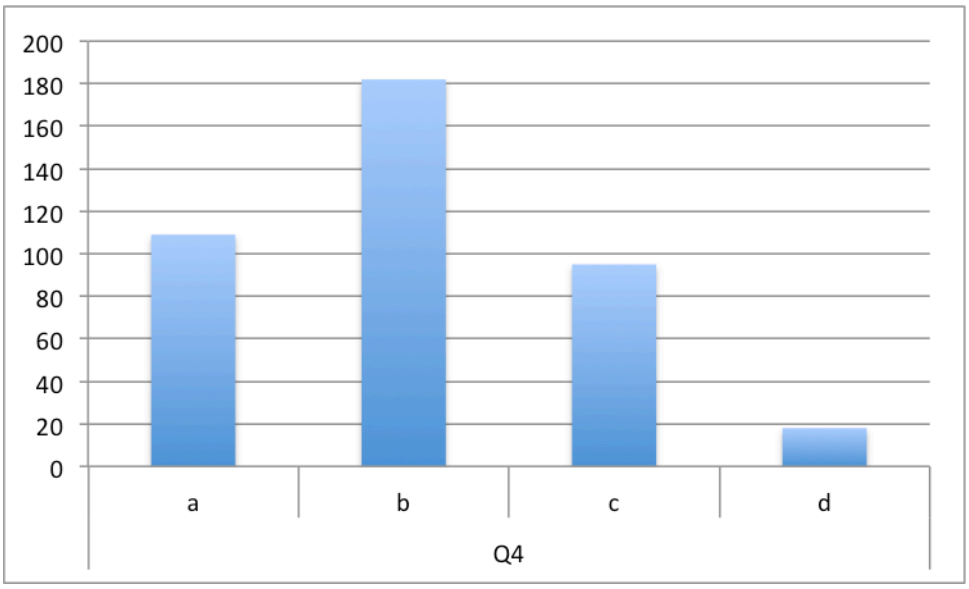
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d
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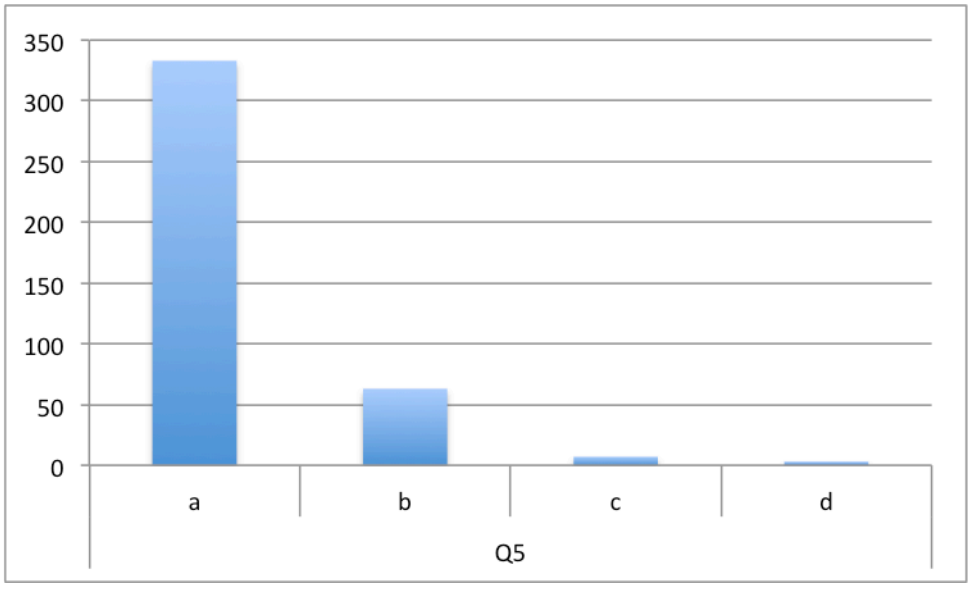
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d
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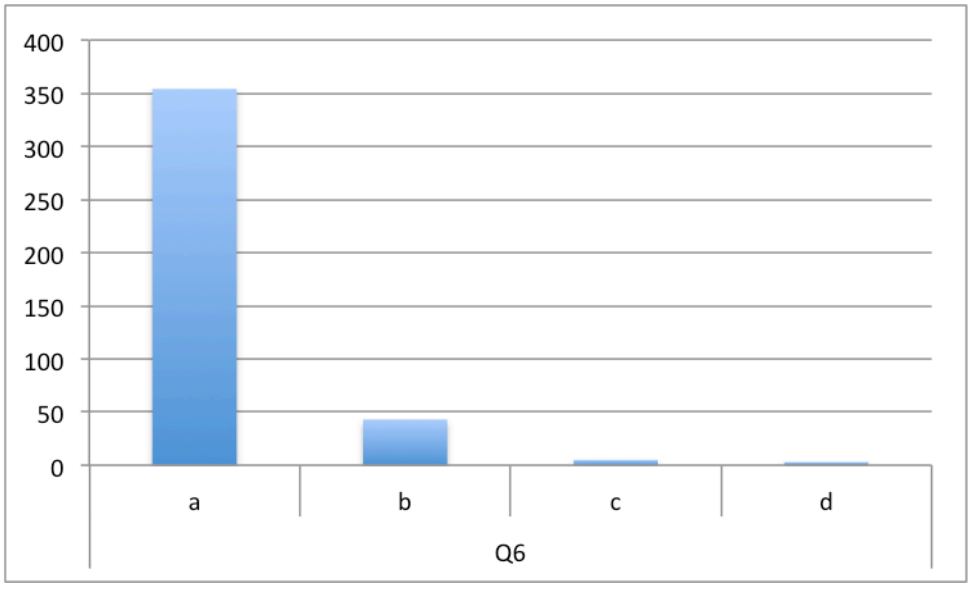
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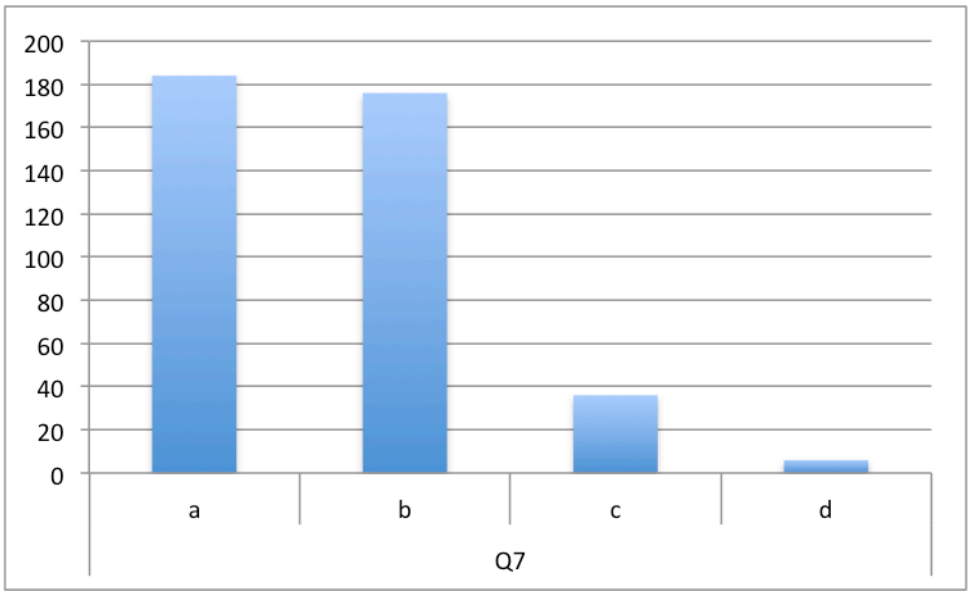
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c
d
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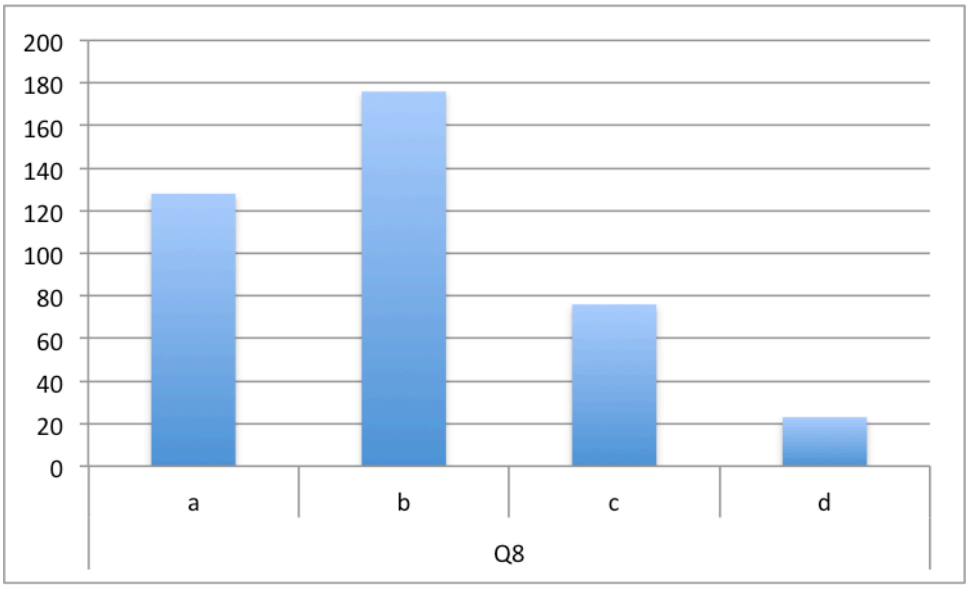
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b
c
d
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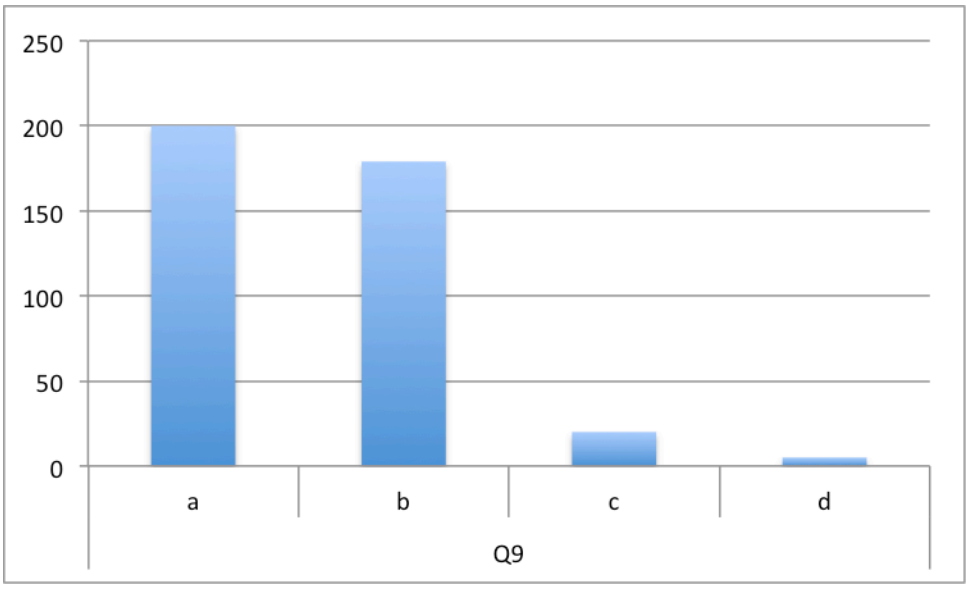
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d
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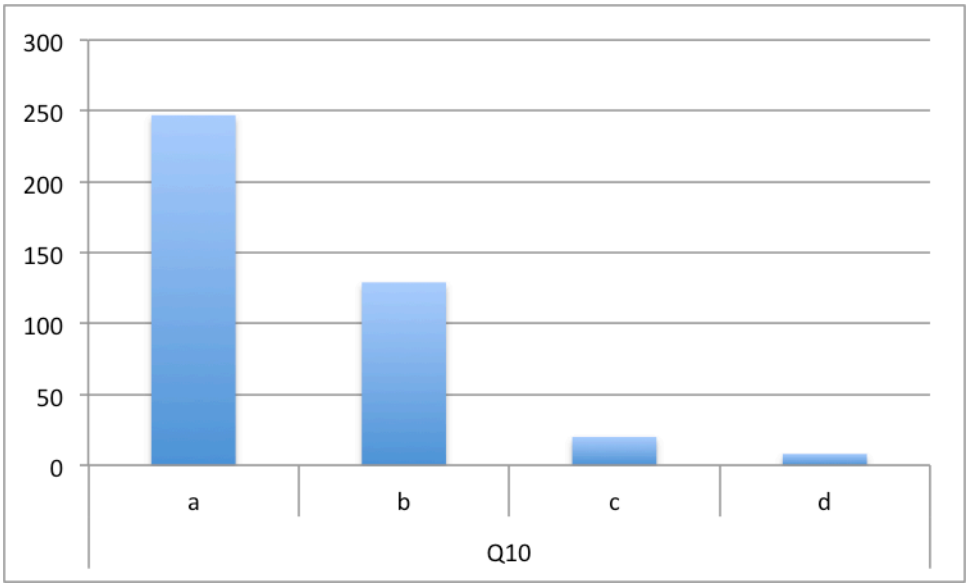
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d
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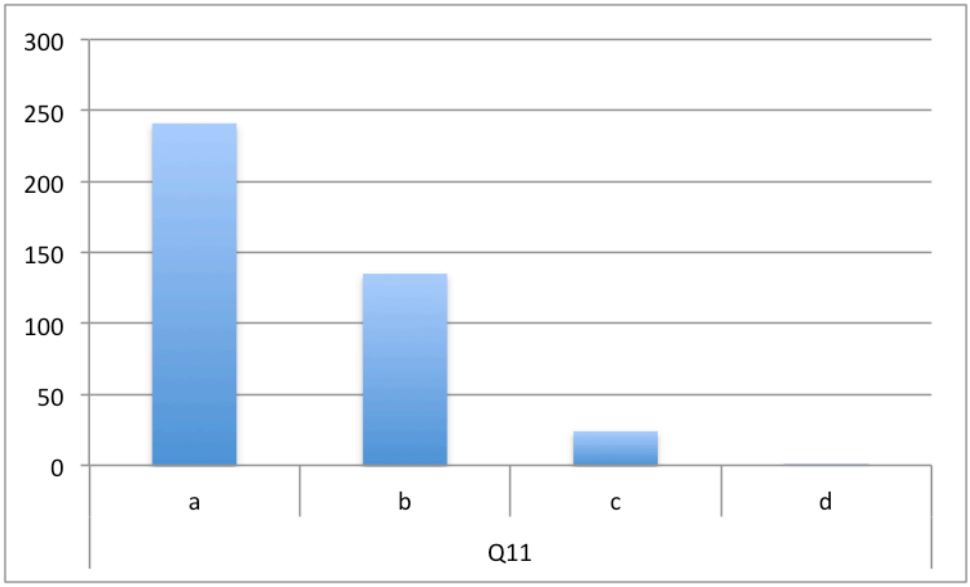
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b
c
d
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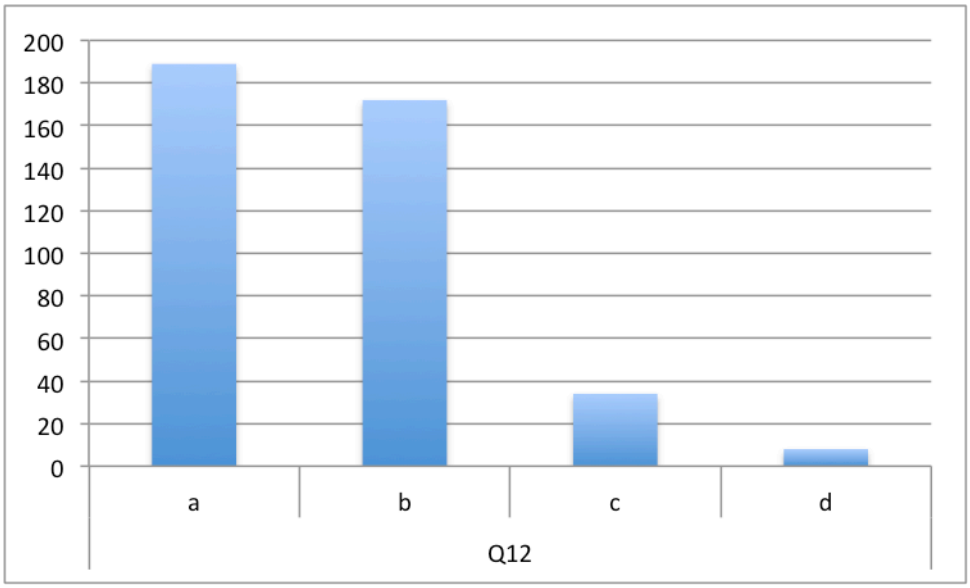
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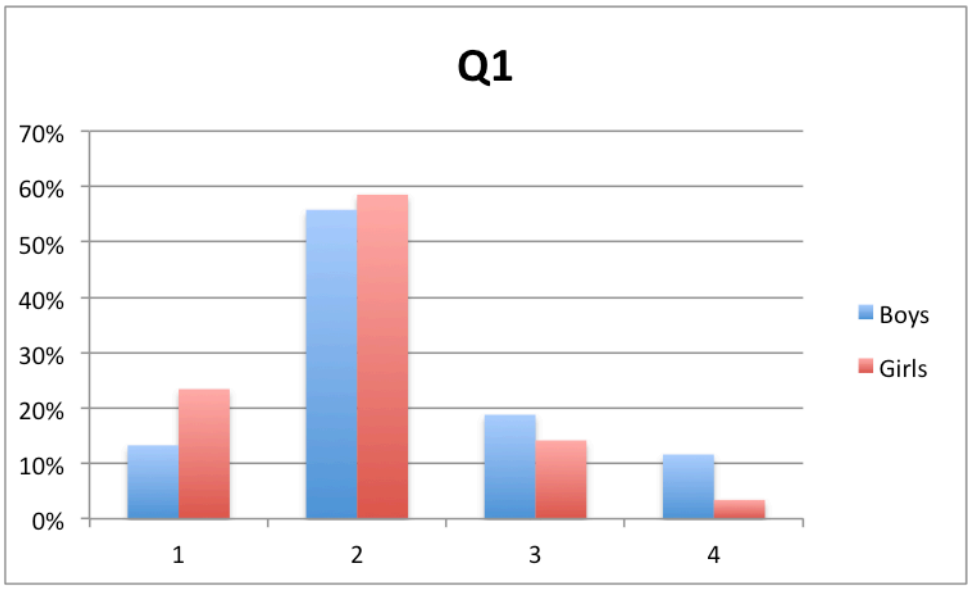
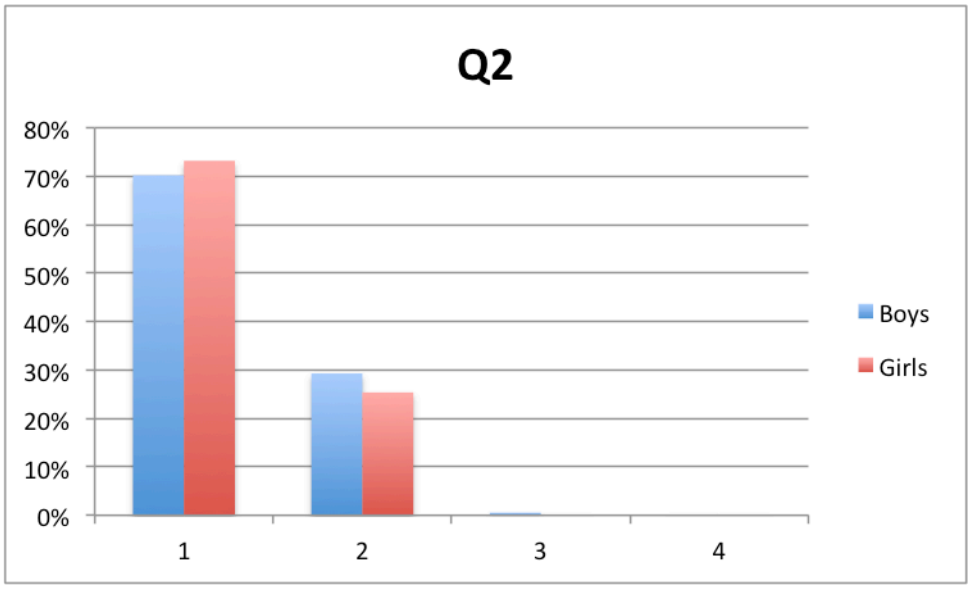
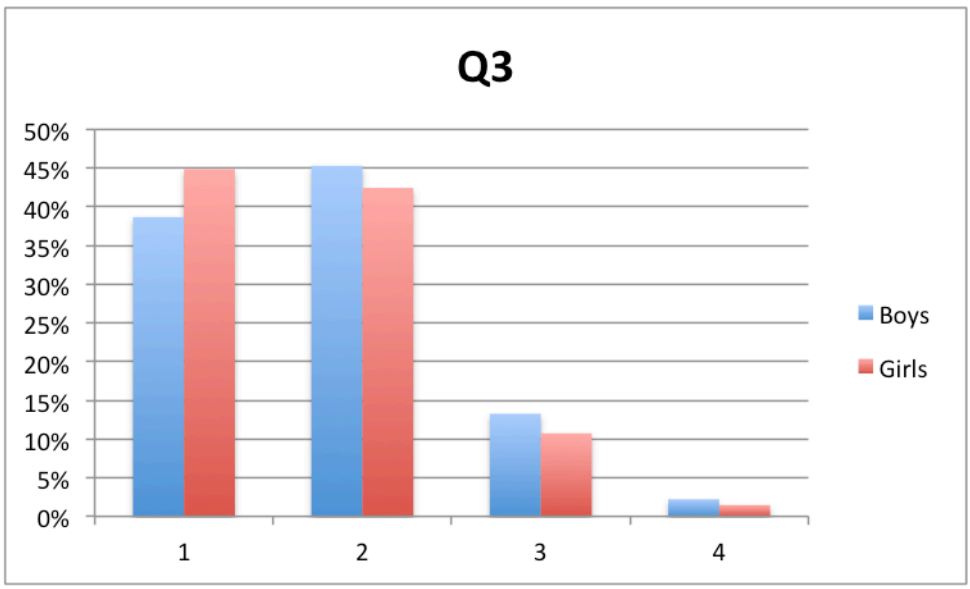
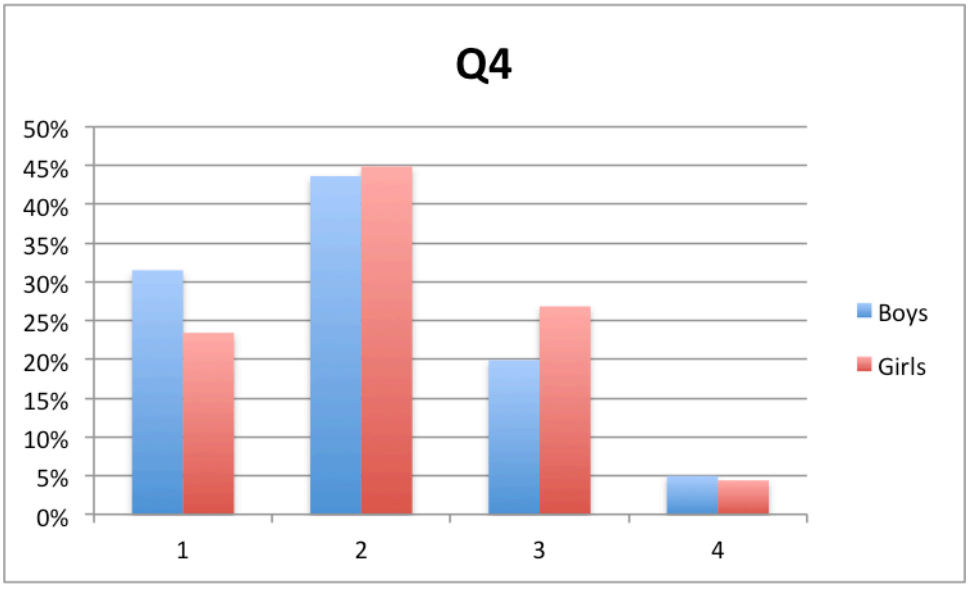
0
a
b
c
d
Q12

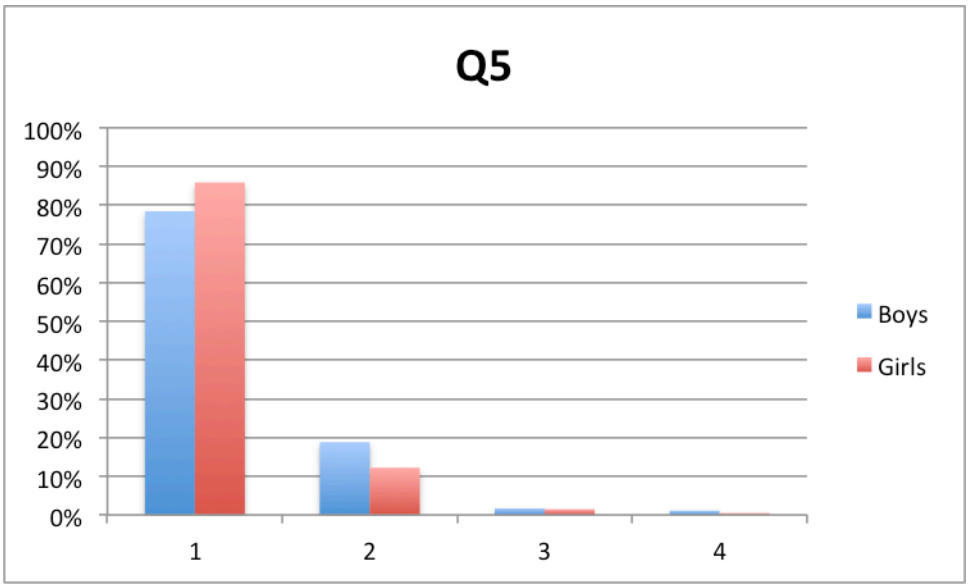
Appendix E2 Student questionnaire: Data by Gender








Q4
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
1
2
3
4
Boys
Girls


Q5
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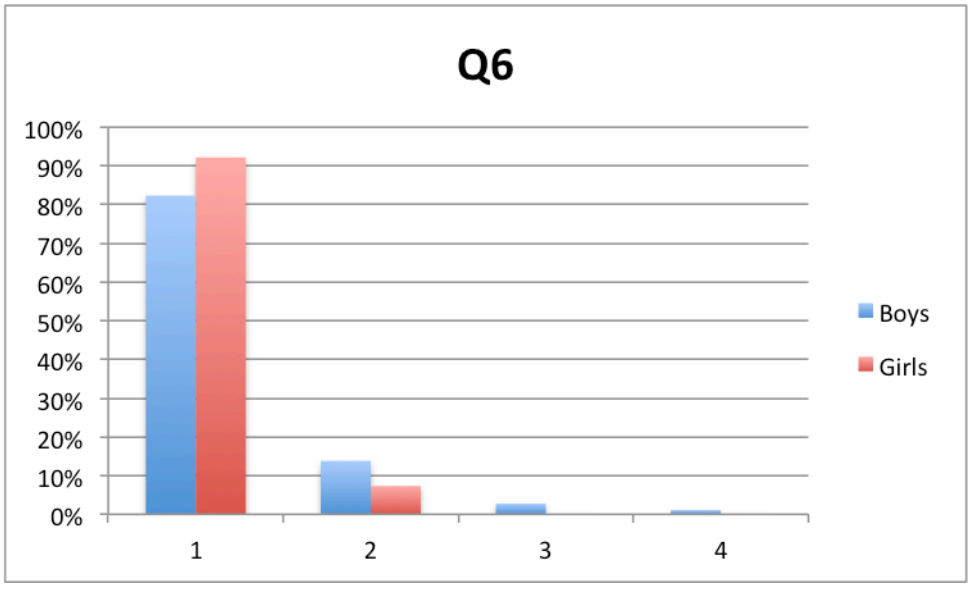
1
2
3
4
Boys
Girls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1
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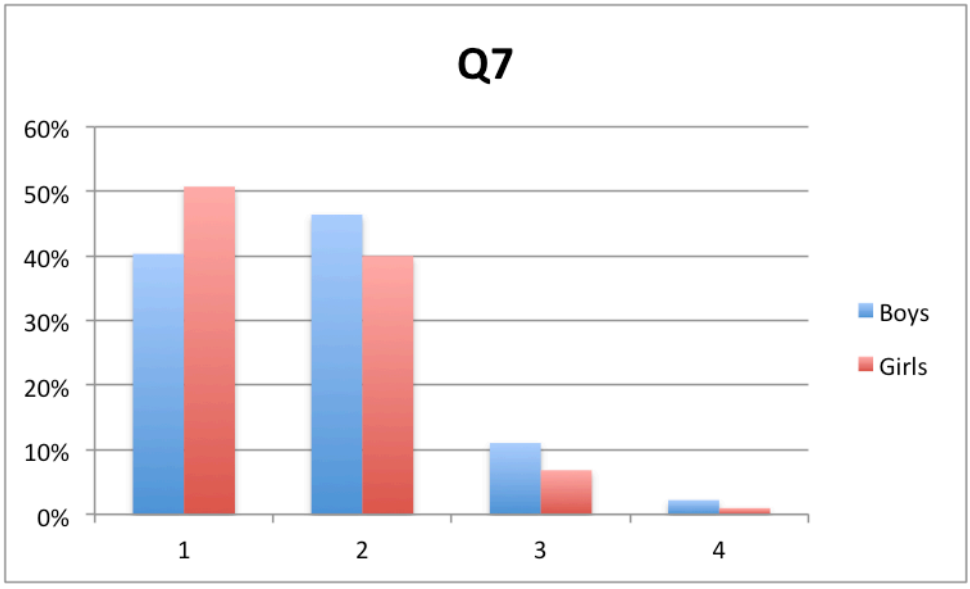
3
4
Boys
Girls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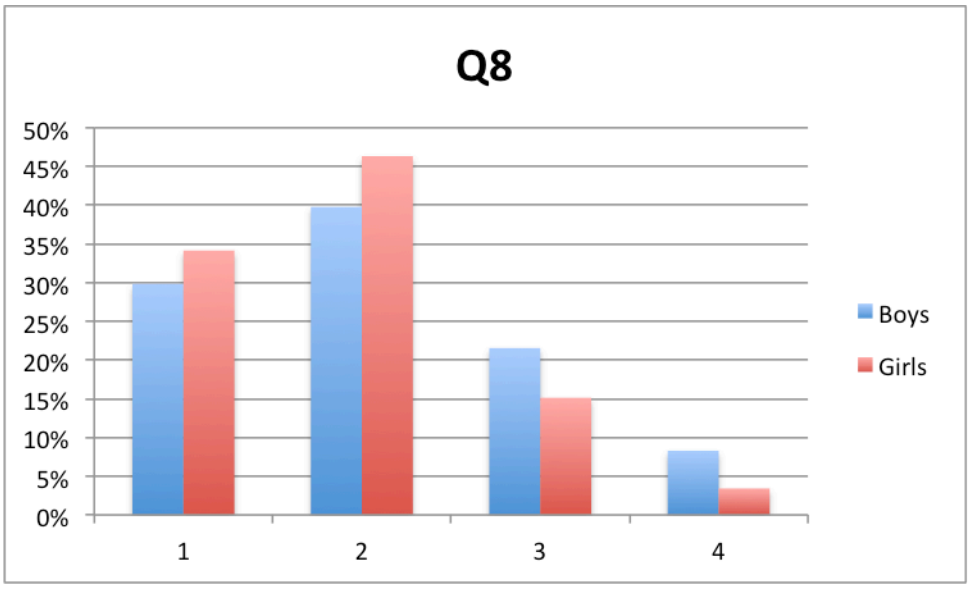
3
4
Boys
Girls


Q8
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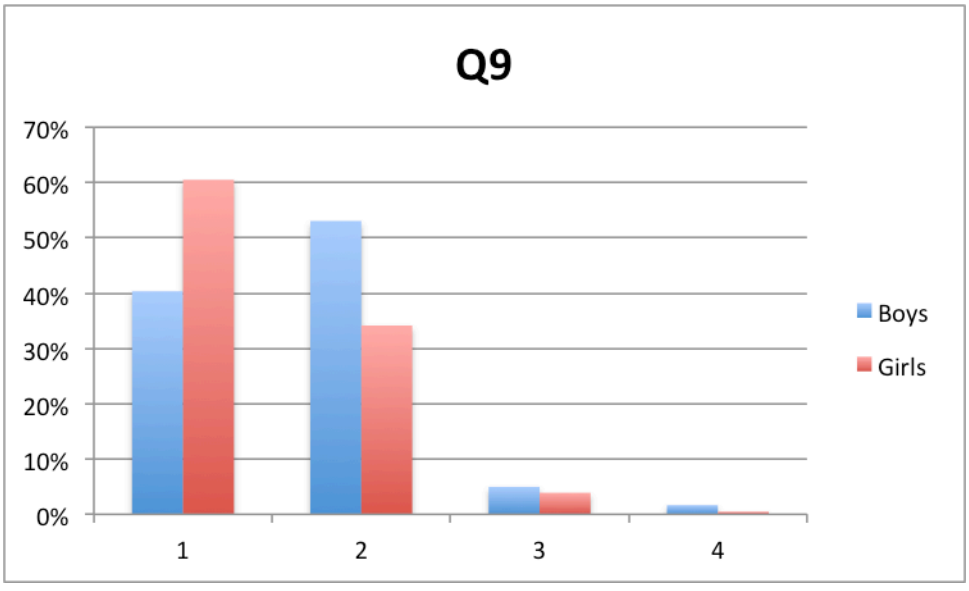
Boys
Girls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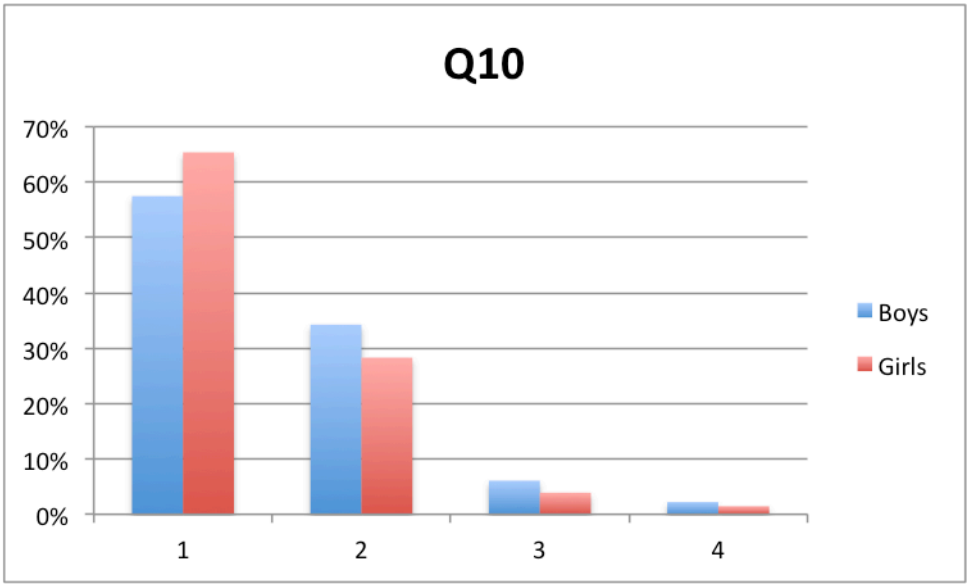
3
4
Boys
Girls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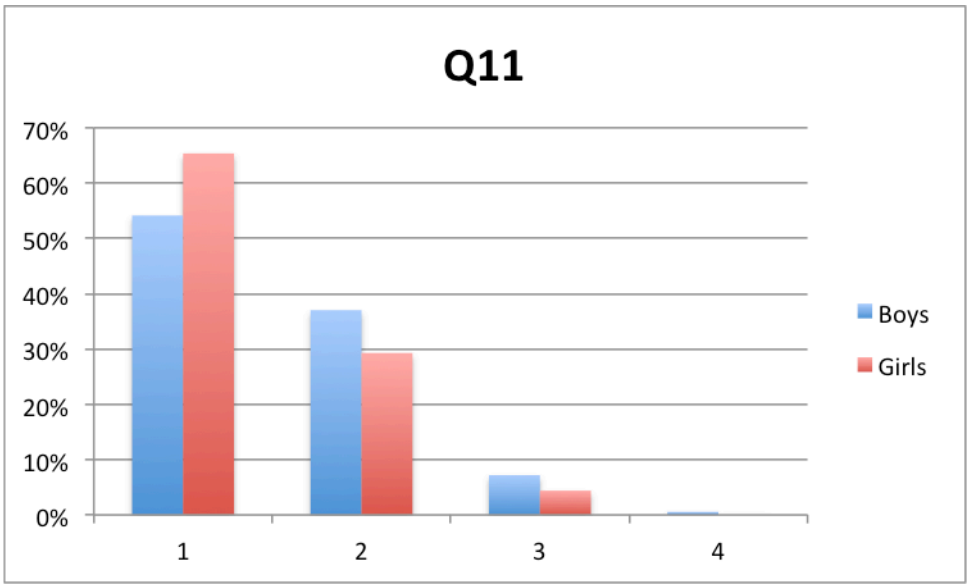
2
3
4
Boys
Girls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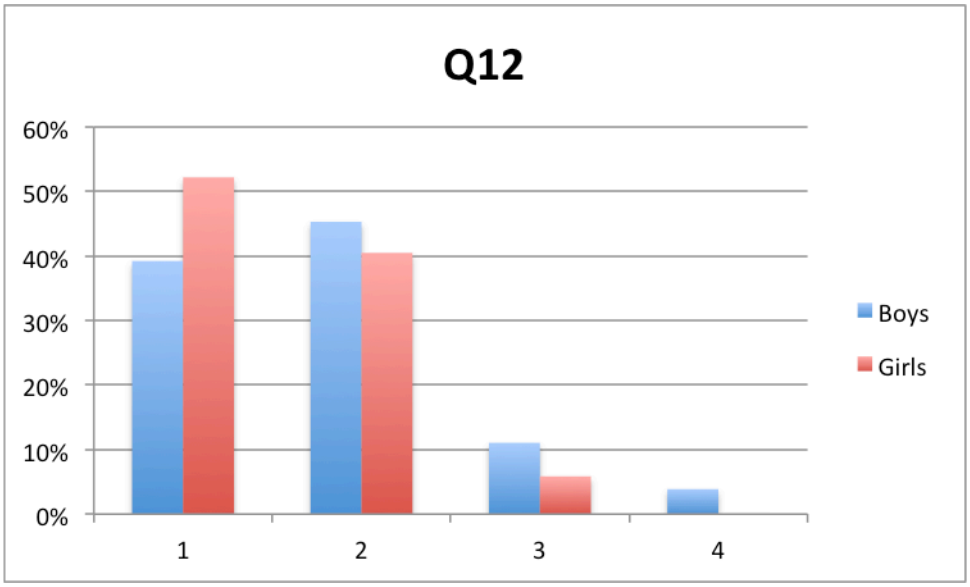
0%
1
2
3
4
Boys
Girls


Q12
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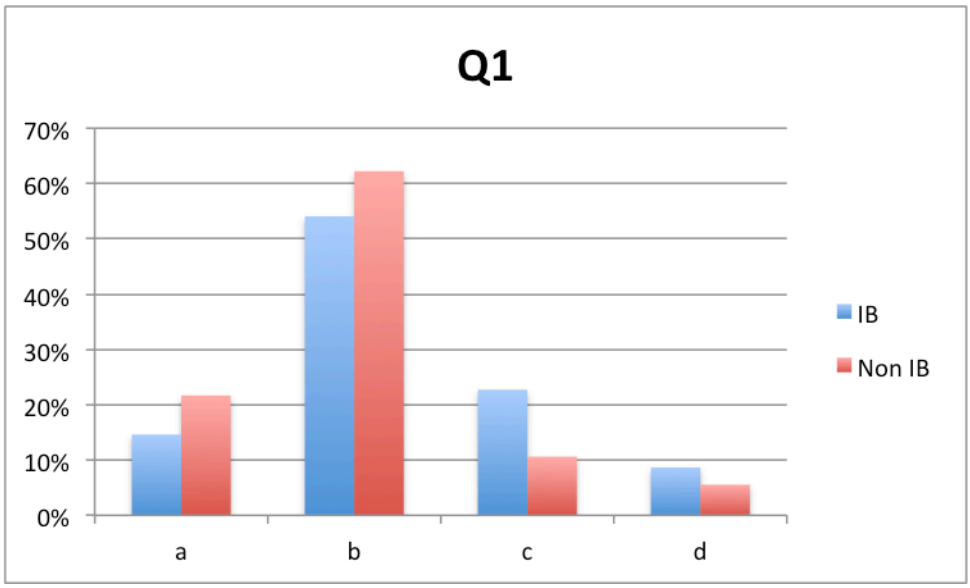
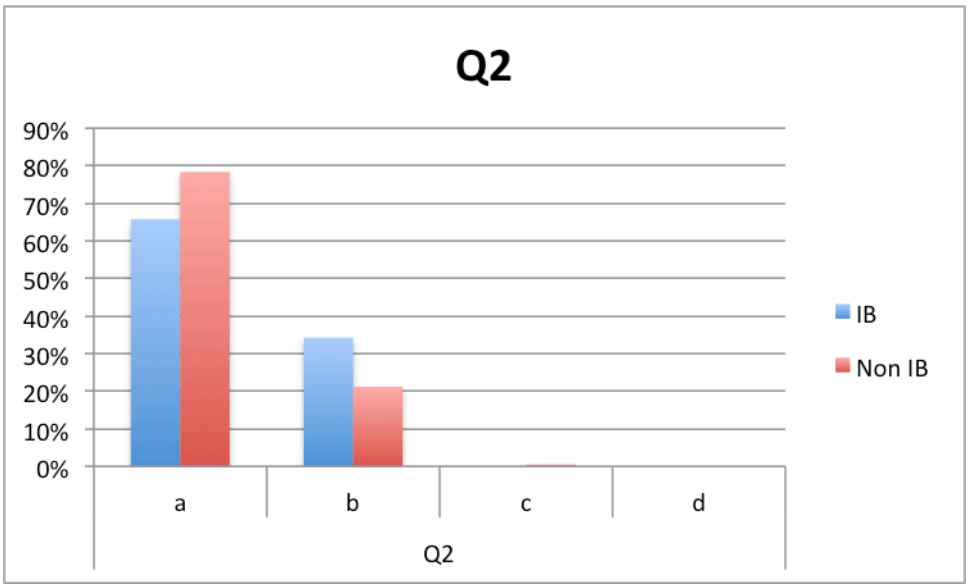
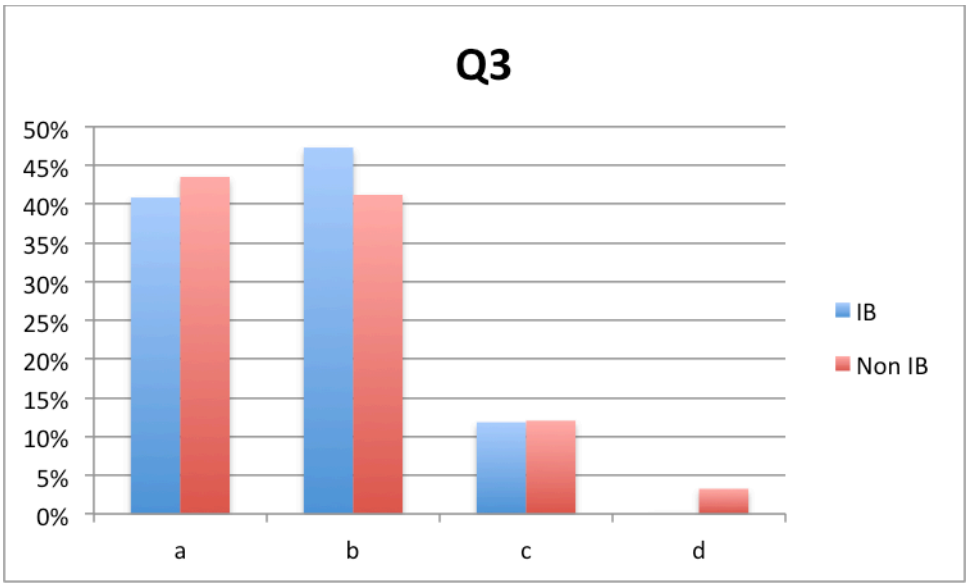
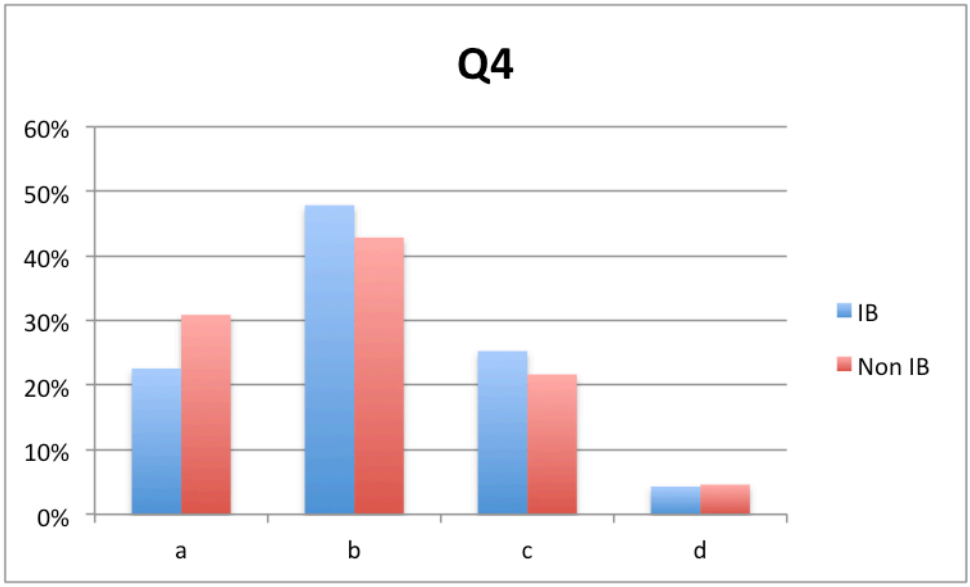
1
2
3
4
Boys
Girls

Appendix E3: Student questionnaire: Data by curriculum IB/Non-IB





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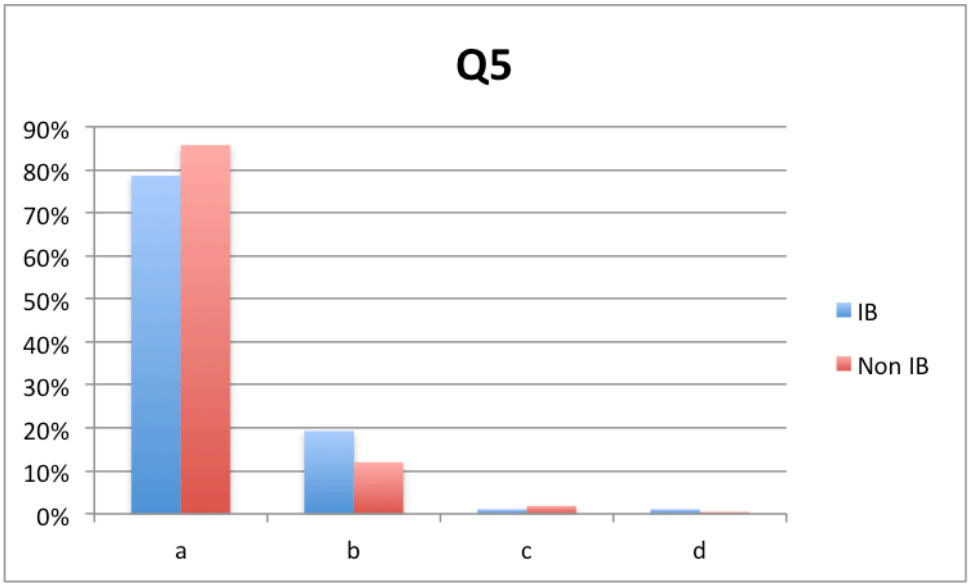
60%
50%
40%
30%
20%
10%
0%
a
b
c
d
IB
Non IB


Q5
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80%
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60%
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40%
30%
20%
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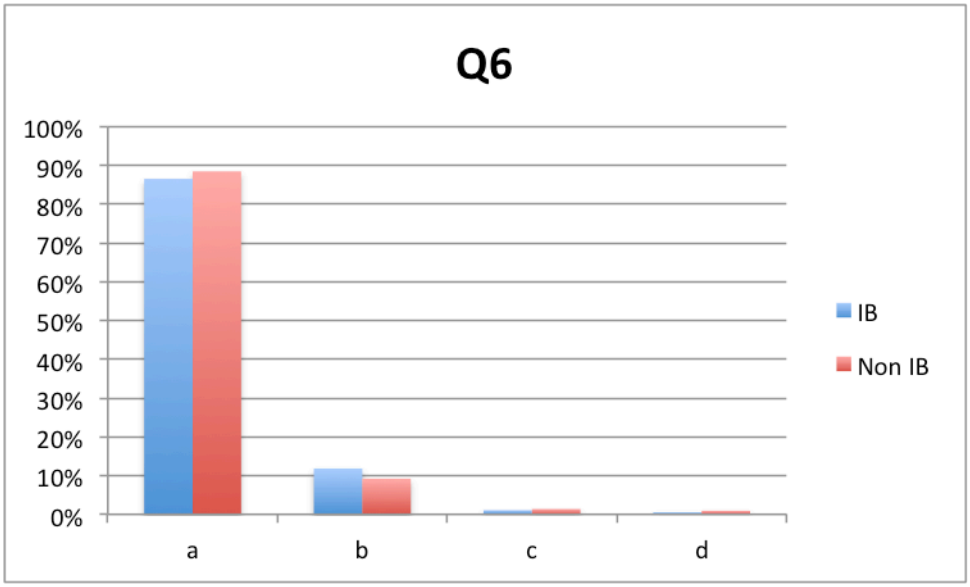
0%
a
b
c
d
IB
Non IB


Q6
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20%
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0%
a
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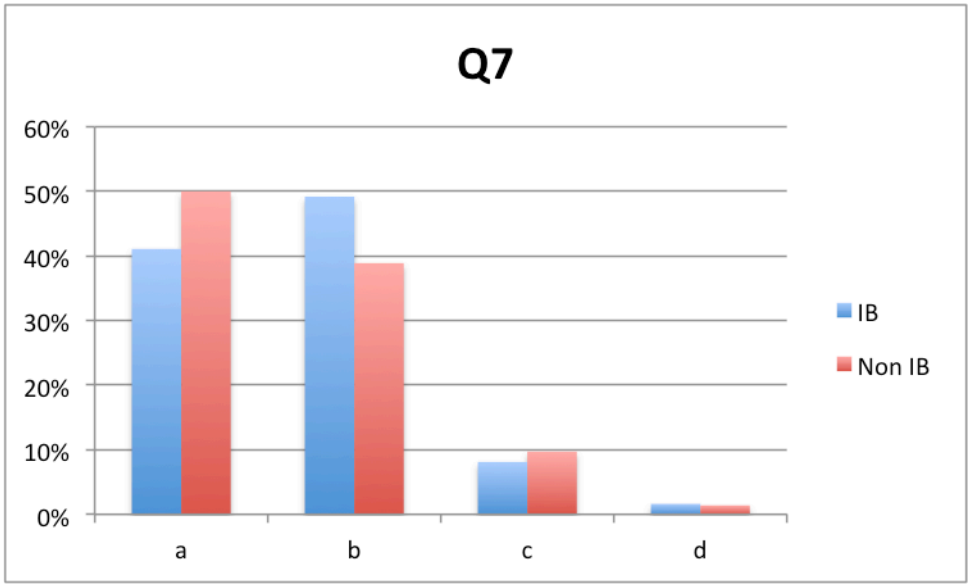
c
d
IB
Non IB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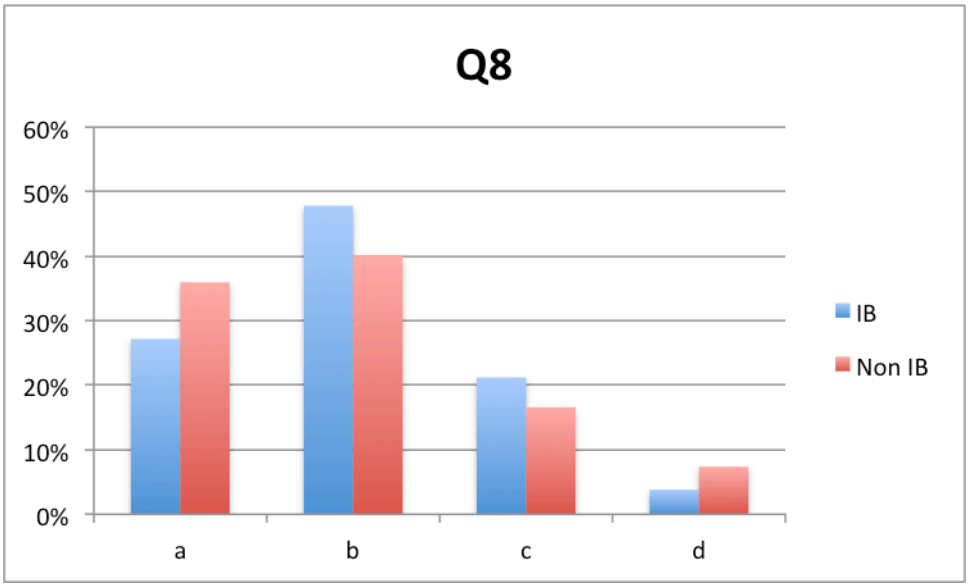
a
b
c
d
IB
Non IB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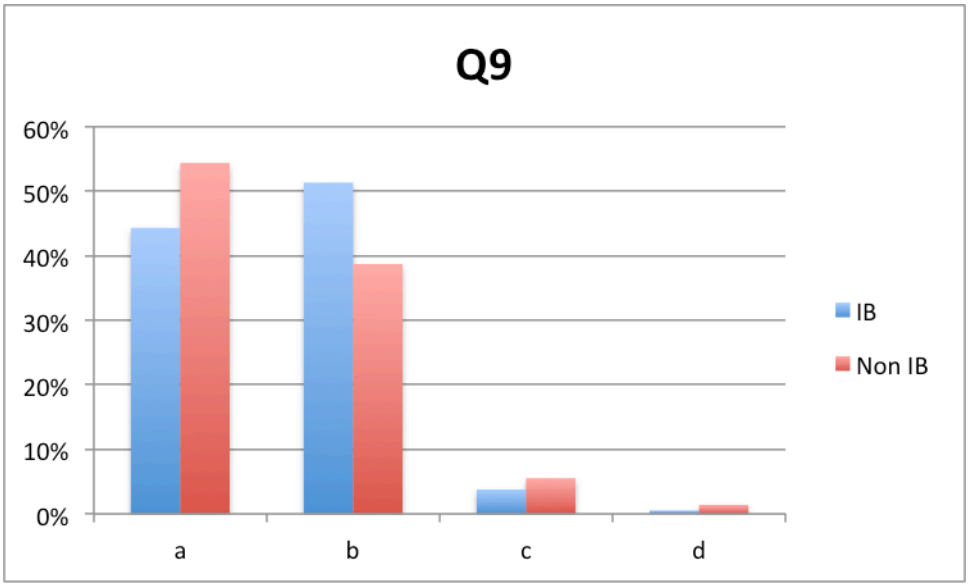
b
c
d
IB
Non IB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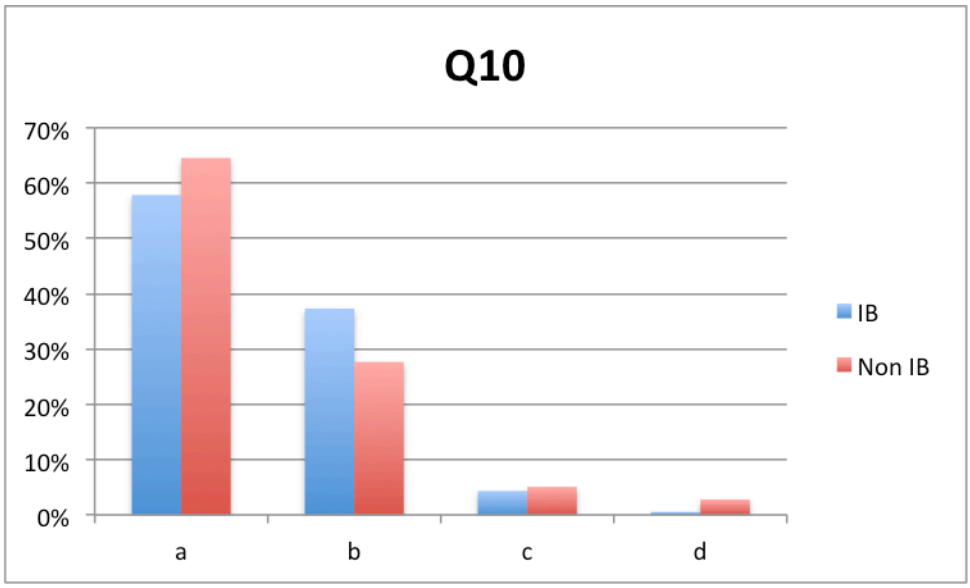
a
b
c
d
IB
Non IB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a
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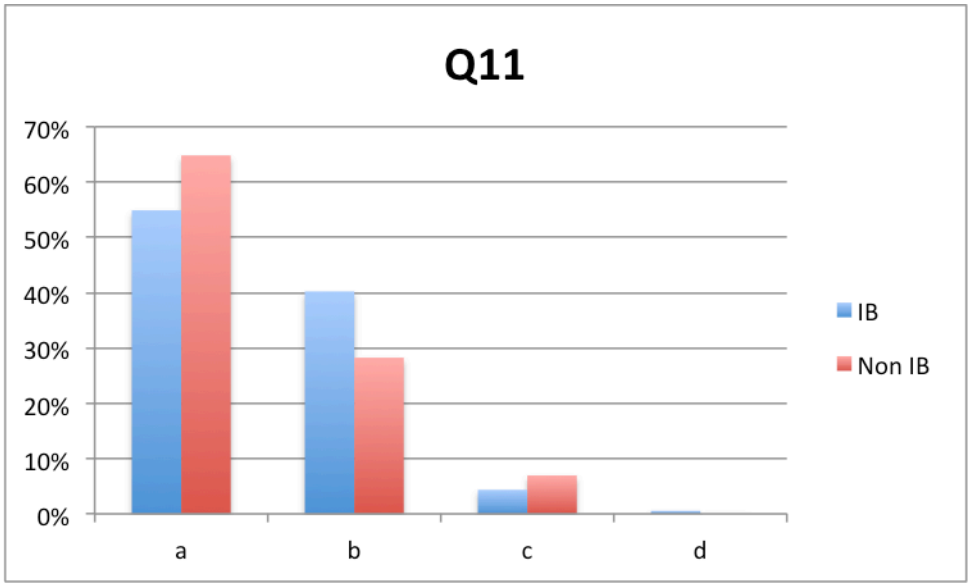
c
d
IB
Non IB


Q11
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50%
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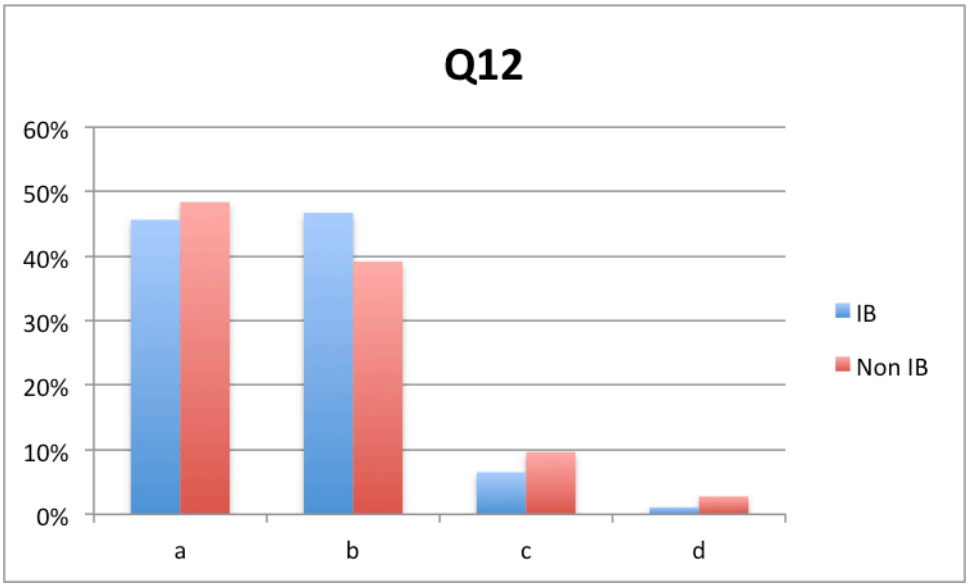
30%
20%
10%
0%
a
b
c
d
IB
Non IB


Q12
60%
50%
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30%
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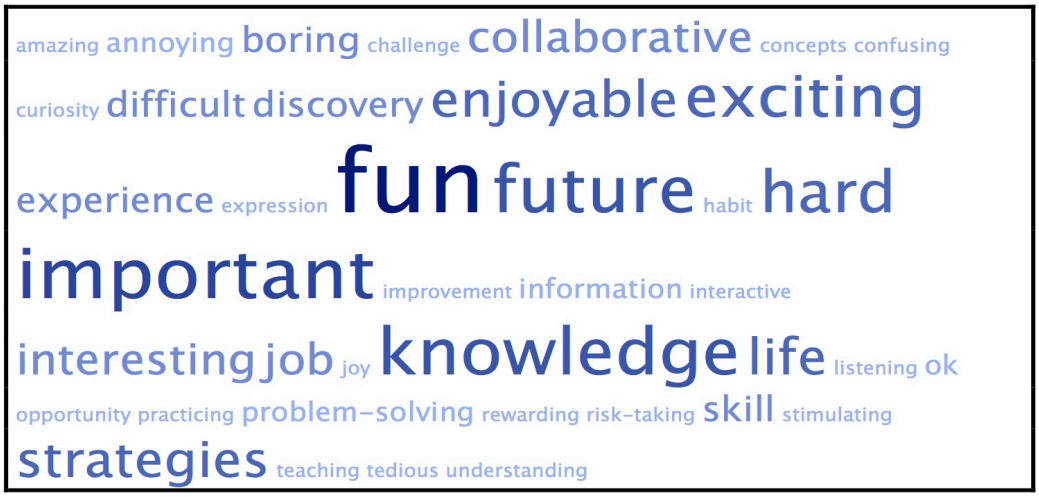
a
b
c
d
IB
Non IB

Appendix F: Tag Crowds

Appendix F1: Tag Crowd Sentence Starter 1: IB students

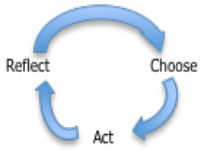


Appendix F2: Tag Crowd Sentence Starter 1: Non-IB students

Appendix G: Negative Statements – "Learning is……"

NON-IB		
School	Statement	Comment
DBS	Hard because you are supposed to learn something in most lessons but it is hard to remember everything	Learning related to memorising
	Quite boring	
	Like not really exciting and not hard but learning should be fun that is how we learn better	Learning should be fun
	Sometimes fun but sometimes it can be quite boring it depends what we are learning	
	Fun and enjoyable as long as your teacher makes it fun	Teacher importance recognised
	A bit fun but it needs to be more hands on sort of stuff instead of text book stuff	Textbooks not so engaging
	Sometimes can be a bit boring with the wrong strategy or teacher but over all it can be fun	Wrong teacher- importance
	Fun sometimes but when we go over stuff it can be a bit boring	Review if you know it already- not differentiated learning?
	Memorizing facts and improving	Memory and fact based
	Fun but sometimes it gets boring and I already know it	Differentiation?
	Fun and worth it but sometimes it can be a bit boring and sometimes I really want to do it	
	Well sometimes its really fun and sometimes its really boring	
	Boring but it can be fun	
	Sometimes exciting but sometimes I feel bored in the lesson	
	Sometimes fun but mainly copying from the board	Teacher- classroom management
PSUK	Ok when my teacher makes it fun. Sometimes learning gets a bit boring	Teacher importance
	Fun but quite boring when the teacher takes a long time to teach you it	Teacher importance
	Horrible	
	Boring	
	Boring	
	Boring	
	Fun sometimes -sometimes boring	
SA	Something that you learn to write a test	More test driven curriculum

IB Schools		
FIS	Sometimes not and sometimes fun because I don’t like someone talking five hours	Too much teacher talk
	Not fun or not interesting if there isnt anything memorable about it	Not engaged
	Fun but also boring depending on what you are learning and how	Way of learning important
	Not very fun but I know that I need to learn to get a good job	
	Tedious but important	
	Fun but it depends on what I learn because I like to learn about specific things	Independent learner
	Not my favouritest thing in the world	
SS	Learning is sort of fun but sometimes we do tests and I don't really like it	National requirement influence on IB
UPS	Not what I really like because I get bored sometimes but we all need it for the future	

<table>
<tr><th colspan="5">Essential Elements</th><th>International-Mindedness</th></tr>
<tr><th>Knowledge - what do we want the students to know about?</th><th>Concepts - what do we want the students to understand?</th><th>Skills - What do we want the students to be able to do?</th><th>Attitudes - What do we want the student to feel, value and demonstrate?</th><th>Action - How do we want the student to act</th><th>IB Learner Profile</th></tr>
<tr><td rowspan="2">PYP Transdisciplinary Themes</td><td rowspan="2">Form
What is it like?</td><td rowspan="3">Social Skills
1. Accepting responsibility
2. Respecting others
3. cooperating
4. Resolving conflict
5. Group decision making
6. Adopting a variety of roles</td><td>Appreciation
Valuing of the wonder and beauty of the world and its people</td><td rowspan="2"> 
</td><td>Inquirers
Ask questions
Are curious about the world around them</td></tr>
<tr><td>Commitment
Serious about learning, shows self-discipline and responsibility</td></tr>
<tr><td>Who we are</td><td>Function
How does it work?</td><td>Confidence
Confident in their ability as learners, courage to take risks, applying what they have learned and making appropriate choices</td><td>Thinkers
Use what they know
Link with something new
Build on other people's ideas</td></tr>
<tr><td>Where we are in time and place</td><td>Causation
Why is it like it is?</td><td rowspan="2">Communication skills
1. Listening
2. speaking
3. Reading
4. Writing
5. Non- verbal communication</td><td>Cooperation
Works in a group, collaborating and leading/following as the situation demands</td><td>Voluntary action based on the needs of the student community</td><td>Communication
Follow directions
Express feelings, thoughts and ideas in words, mathematics, art and music</td></tr>
<tr><td>How we express ourselves</td><td>Change
How is it changing?</td><td>Creativity
Creative and imagination in thinking and in approach to problems</td><td rowspan="2">Service
1. To self (at home and school
2. To fellow students (in classroom and playground)
3. To staff
4. To community</td><td>Knowledge
Learn more about themselves and the world around them</td></tr>
<tr><td>How the world works</td><td>Connection
How is it connected to other things?</td><td rowspan="2">Thinking Skills
1. Acquisition of knowledge
2. Comprehension
3. Application
4. Analysis
5. Synthesis
6. Evaluation
7. Dialectical thought
8. Metacognition</td><td>Curiosity
Curiosity about learning and of the world and its people and cultures</td><td>Risk Takers
Are willing to make mistakes
Are prepared to try new things
Are willing to try and do things in different ways</td></tr>
<tr><td>how we organize ourselves</td><td>Perspective
What are the points of view?</td><td>Empathy
Able to project themselves into another's situation in order to understand others</td><td>Community service</td><td>Principled
Are honest
Make good decisions
Are responsible learners</td></tr>
<tr><td>How we share the planet</td><td>Responsibility
what is our responsibility?</td><td rowspan="2">Research Skills
1. Formulating questions
2. Observing
3. Planning
4. Collecting data
5. Recording data
6. Organizing data
7. Interpreting data
8. Presenting data</td><td>Enthusiasm
Enjoy learning</td><td>Charity Work</td><td>Caring
Recognize they are part of a group
Are thoughtful
Help others</td></tr>
<tr><td>Disciplinary subject areas</td><td>Reflection
How do we know?</td><td>Independence
Thinking and acting alone, making judgement and being able to defend them</td><td>Environmental Causes</td><td>Open Minded
Listen to other people's thoughts and ideas</td></tr>
<tr><td>Languages</td><td rowspan="6"></td><td rowspan="6">Self-management skills
1. Gross motor skills
2. Fine motor skills
3. Spatial awareness
4. Organization
5. Time management
6. Safety
7. Health lifestyle
8. Codes of behaviour
9. Informal choices</td><td>Integrity
Being honest and demonstrating a considered sense of fairness</td><td>Reflection on Actions Taken</td><td>Balanced
learn more about the importance of being healthy
Use time wisely
Are organized</td></tr>
<tr><td>Mathematics</td></tr>
<tr><td>Science</td><td rowspan="2">Respect
Respect themselves, others and the world around them</td><td rowspan="2"></td><td rowspan="2">Reflective
Think about what they do and say
Think about their learning
Think about different ways things could have been done</td></tr>
<tr><td>Social studies</td></tr>
<tr><td>Arts</td><td rowspan="2">Tolerance
Sensitivity towards differences in the world and being responsive to the needs of others</td><td rowspan="2"></td><td rowspan="2"></td></tr>
<tr><td>PSPE</td></tr>
</table>