A SELF-EVALUATION AND DEVELOPMENT FRAMEWORK FOR QUALITY IMPROVEMENT IN EIGHT KINDERGARTENS IN SINGAPORE:

A CASE STUDY

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LIST OF ABBREVIATIONS

AE	Adult Engagement
AES	Adult Engagement Scale
CI	Child Involvement
CIS	Child Involvement Scale
CPT	Certificate in Pre-school Teaching
DPE-L	Diploma in Pre-school Education – Leadership
DPE-T	Diploma in Pre-school Education – Teaching
ECE	Early Childhood Education
ECERS	Early Childhood Environmental Rating Scale
ECERS-R	Early Childhood Environmental Rating Scale – Revised
EEL	Effective Early Learning Programme, UK
EL	English Language
EPPE	Effective Provision of Pre-school Education Project, UK
FY	Financial Year
GCE	General Cambridge Examinations
GCE 'O'	General Cambridge Examinations - Ordinary Level
GCE 'A'	General Cambridge Examinations - Advanced Level
LIS-YC	Leuven Involvement Scale for Young Children
K1	Kindergarten One level for children age between four and five
K2	Kindergarten Two level for children age above five
MCYS	Ministry of Community Development, Youth and Sports, Singapore
MOE	Ministry of Education, Singapore
MOM	Ministry of Manpower, Singapore
MTL	Mother Tongue Languages
PCF	PAP Community Foundation Kindergarten/ Childcare Centre

ABSTRACT

An increase in demand in quality pre-school education in Singapore has prompted educators to search for more effective strategies in ensuring that early learners receive quality learning while being accountable for funding. The broad aim of this study, therefore, was to explore the feasibility and effectiveness of adopting a self-evaluation and development framework for quality improvement in eight kindergartens in Singapore.

RESEARCH QUESTIONS

Specifically, this study sought answers to two primary research questions (a & b) and two secondary research questions (c & d) as follows:

(a) In what ways, if any, would the adoption of a self-evaluation and development framework improve the level of child involvement in the participating pre-schools?

(b) In what ways, if any, would the adoption of a self-evaluation and development framework improve the level of adult engagement with children in the participating pre-schools?

(*c) In what ways, if any, would the adoption of a self-evaluation and development framework enhance teachers' capabilities and skills in the participating pre-schools?*

(d) In what ways, if any, would the adoption of a self-evaluation and development framework improve leaders' capabilities and skills, and in turn help effect organisational change in the participating pre-schools?

METHODOLOGY

A case study approach was adopted to explore, discover and find out the variables in a self-appraisal process that might have contributed to or hindered the quality improvement of a kindergarten. To establish if there was any improvement, child involvement levels, adult engagement levels and early childhood environmental ratings were used in this study as a proxy for assessing quality.

This study involved a total of 790 children from Kindergarten One and Two classes and 67 educators from eight kindergartens in Singapore, and spanned the years 2005 and 2006. Within the two-years, the participating kindergartens went through a self-evaluation and development cycle, consisting of four phases: self-evaluation, action-planning, improvement and reflection.

In the first year of the study, each of the eight centres started the self-evaluation process by gathering baseline data on the quality of their learning environment, child involvement and adult engagement. The Early Childhood Environmental Rating Scale was adopted by each centre to appraise the child's learning environment. In order to observe and assess the quality of child involvement, the Leuven Child Involvement Scale was used by the teachers. Finally, the Adult Engagement Scale was used by the principals and external assessors to evaluate the quality of teacher interaction with children.

Following the self-evaluation phase, the profiles of the environmental ratings, child involvement levels and adult engagement levels were analysed. Subsequently, strengths and gaps were identified for their action planning. In the second year of the study, these centres carried out their action plans. During this improvement phase, these centres continued using the Child Involvement Scale and Adult Engagement Scale to gather data, so as to establish evidence of improvement, if any, before and after implementing their

plans. At the reflection phase of the cycle, participating educators shared their experiences through their reflection logs, focusing on how the self-evaluation journey had impacted on their capabilities and skills.

The design of the research was based on a mix of quantitative and qualitative research methods and techniques to determine the quality status of the participating centres. Two sets of quantitative data related to the child involvement levels and adult engagement levels in Year I (2005) and Year II (2006) were analysed using the computer software programme SPSS 17.0. Qualitative data were gathered through questionnaires, anecdotal notes, discussion notes and reflection logs that provided input for the centres' reports.

FINDINGS

a) Child Involvement

A comparative analysis of the mean data in these participating kindergartens suggests evidence of improvement on the quality of child learning in terms of child involvement with the implementation of the self-evaluation and development framework. The overall mean child involvement score among the eight centres in Year II (2006) was higher than that of the overall mean data in Year I (2005) of the study. In this study, the testing results also show that there were statistically significant differences by gender and by age groups in Year I mean scores, but not found in Year II mean scores. Further analysis revealed that there were gender differences and age group differences in terms of child involvement when they were involved in different learning activities and in different settings.

b) Adult Engagement

In this study, there was a significant difference between teachers in Year I (2005) and Year II (2006) in terms of adult engagement and its three sub-scales: sensitivity, stimulation and autonomy. The findings show that there was a declining trend in the mean adult engagement scales from Year I (2005) to Year II (2006). In this study, the findings show that there were significant positive correlations among the three sub-scales. There were also significant positive correlations between adult engagement and child involvement in Year II, but in Year I, the finding was not significant.

A cluster analysis identified three clusters of teachers with distinct characteristics in terms of their age, number of years of experience in early year settings, academic qualifications and professional training status. These three cluster groups of teachers were: high-performers, under-performers and mediocre-performers.

c) Enhanced Capabilities and Skills

Qualitative data were summarized in the centres' reports that describe the inter-personal relationships of people in a process of change within the context of each centre. It was within the process of change that a learning culture emerged in some of these institutions. Throughout the four phases of the self-evaluation cycle, the principals set clear goals and targets, adopted useful methods and clear procedures, and provided strong infrastructural support. These were the key contributing factors that enhanced their leadership quality. It was also through this journey that the role of reflective practices and collaborative learning promoted professional growth among some of the educators.

In conclusion, this self-evaluation and development model could be one of the effective strategies for quality improvement in Singapore kindergartens.

Quality assessment should be evidence-based and data-driven. Reflective practices and collaborative learning in the self-appraisal process require members to build quality relationships. In turn, this will promote high quality adult learning that would contribute to quality child learning. Moving forward, there appears to be an urgent need for reliable tools in quality assessment and for training assessors in Singapore. There is also a need to promote self-appraisals to recognize the efforts put in by practitioners in their practices.

CANDIDATE'S DECLARATION

I declare that

- this thesis presents work carried out by myself and does not incorporate without acknowledgement any materials previously submitted for a degree or diploma in any university;
- to the best of my knowledge it does not contain any materials previously published or written by another person except where due reference is made in the text; and
- all substantive contributions by others to the work presented, including jointly authorised publications, is clearly acknowledged.

_____

Har Tshin CHONG-LOKE

_____

Date

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Har Tshin, 15 January 2010

CHAPTER I
INTRODUCTORY ORIENTATION

1.1 INTRODUCTION

This introductory chapter provides the rationale and context of the study. It illustrates the evolving landscape of pre-school education in Singapore, the findings of selected previous studies on early learning and the increasing demand for quality provision of pre-school education. In addition, this chapter states the aims of the study, enunciates the research questions and describes the research design for the study. The significance and the limitations of the study as well as the terminology used for this study are described at the end of this chapter.

1.2 CONTEXT OF THE STUDY

1.2.1 Background and Development of Singapore

Singapore is a small and compact city-state that has a land area close to 700 km^2. Due to the absence of natural resources, Singapore depends heavily on its human resources. Therefore, it is not surprising that investment in education has been increasing over the last decades. The Department of Statistics (2009) reveals that in 1993, 2.9 percent of the Gross Domestic Production (GDP) was spent on education. In 1998, It went up to 3.5 percent.

It was 3.7 percent in 2003 and 3.53 percent in 2008. This trend of public investment on education indicates that the Singapore Government sees the building of human capacity as crucial if the nation is to survive in this competitive world. Due to Singapore's dependence on people, their education is particularly valued.

1.2.1.1 Demographic Profile

a) Low birth rates

Changes in social conditions in Singapore are also taking place. The growth rate of Singapore residents decreased from 2.2 in 1991 to 1.6 in 2001 and 1.7 in 2008 (Singapore Department of Statistics, 2009). Like many developed countries, Singapore is at a sub-replacement population growth. In August 2000, former Prime Minister Goh Chok Tong expressed concern that the total fertility rate was falling. He said, "as PM, I have to be concerned about the impact of low fertility rates on the future of our society as this would affect the workforce" (Goh, 2000). In 2004, the present Prime Minister Lee Hsien Loong announced his pro-family policies, including centre-based infant care subsidies, an increase in maternity leave from the then two months to three months, a week of childcare leave for one parent to attend to the child and a reduction in the levy for domestic maids employed for childcare (Lee, 2004). In 2008 at the National Day Rally, PM Lee announced new measures and additional funding on child incentives. He said that the total amount was "about S$1.6 billion a year or 0.6 percent of GDP" (MediaCorp, 2008). Though incentive schemes have been put in place, these incentives have yet to yield promising results.

b) Declining home-based childcare and increasing female workforce

Based on the United Nation Economic and Social Survey of Asia and the Pacific 2007 (UNESCAP, 2007), Singapore's GDP would have increased by approximately S$1.06 billion a year if Singapore had increased its female workforce by 10 percent between 2000 and 2004. Singapore is indeed facing a dilemma. On one hand, Singapore, with limited resources, relies very much on its human resources to boost its economy. Hence, it has good reason to encourage females to enter the workforce. On the other hand, these female workers are also expected to bear and nurture children. As a result, one question posed to Singaporeans is: do we want to grow the GDP at the expense of lowering the birth rate even further?

At present the Singaporean female workforce is increasing. It documented an increase from 28.6 percent in 1970 to 49.4 percent in 1998, and 55.6 percent in 2008 (Ministry of Manpower, 2009). As a result, more and more young children are not being taken care of by their parents. According to the statistics shared by Minister of State for Education at the FY2007 Committee of Supply Debate, 95 percent of pre-school age children in Singapore received formal pre-school education (MOE, 2007a). This is much higher as compared to many OECD countries where the net enrolment rate by children aged three to four per cohort in pre-primary centres by 2007 was 71 percent (OECD, 2009).

With more parents working, most young children are left with childcare-givers or kindergarten teachers. There have been studies on the impact of children growing up at centre-based settings, such as Elliott (2006), Frede (1995), Sammons, Sylva, Melhuish, Siraj-Blatchford, Taggart and Elliot (2003), Scheweinhart and Weikart (1998), Sylva (1996) and Walsh (1989). These studies have shown that the quality early learning programmes, especially for children from disadvantaged homes, had a significant impact on the children's long-term outcomes, including school performance, crime and delinquency and high school completion.

c) Ethnic diversity

Singapore's society is distinguished by its diversity of races and cultures. In June 2009, there was a population of 4.99 million people living in the city state. Among the 3.73 million Singapore citizens and permanent residents, about 74.2 percent were Chinese, 13.4 percent, Malays, 9.2 percent Indians and the remaining 3.2 percent belonged to other ethnic groups (Singapore Department of Statistics, 2009). As a diverse society, social integration has always been a concern to the Singapore Government. Since its independence in 1965, the Government has been taking a secular and non-partial position on policy formulation. Policies and programmes to promote social integration and racial harmony are evident. In 1989, the Housing Development Board introduced the Ethnic Integration Policy aimed at getting people to interact and fostering social harmony. This ethnic and cultural composition of people and the social integration position taken by the Government have implications for education and pre-schools such as the eligibility criteria set for application for the Government Recurrent Grants (Wong, 2000).

Although Singapore is a multi-racial society, the majority of its population is of Asian origin. Thus the philosophies on child learning and roles of schools and teachers are very much influenced by Confucianism, which promotes the view that teachers are depositors of knowledge and children are passive learners. Kwan and Retas (2000, p.61) note that in Singapore pre-schools, there is little emphasis on non-academic activities and pre-school children are expected to spend more time in a teacher-directed and academic-oriented environment. This could reflect the beliefs that formal schooling is considered an important path to social and economic mobility in many Asian countries (Feeney, 1992). Indeed, in Singapore the same is true, that pre-school programmes tend to focus more on preparing children for the academic demands of school (Retas & Kwan, 2000). Teachers are more concerned with the results of the learning processes and how these results can be reported to parents and funding

agencies for the purpose of accountability. For example, in the child progress report books from two participating kindergartens, items such as “able to count from 0 to 20” and “able to recognize letters A to Z” are included. Retas and Kwan (2000) argued that it is crucial that educators recognize and determine the quality of the learning processes and contexts that affect a child’s learning and performance. Home environments, family background and parents’ personal characteristics are equally important in impacting a child’s developmental process (Fan-Eng & Sharpe, 2000).

1.2.1.2 Globalization and its impact on Singapore

As Singapore moves towards becoming a globalised country, there has been a change in the expectations that the Singaporean society, and particularly parents and government funding agencies, have of early childhood education services. In August 2004, Singapore PM Lee in his National Rally Speech said that “the developed and developing countries are all facing ferocious competition because of globalization” (Lee, 2004). He emphasized the need for global skills and for equipping Singapore’s children with the ability to face issues related to globalization.

Global competition and technological complexity are changing the way that businesses operate. In the knowledge-based economy of Singapore, effective use of knowledge is regarded by the Government as the key to economic and social advancement. In the 2006 National Rally speech, PM Lee again reiterated that “[the] world is changing faster than ever and Singapore is changing rapidly too. We must adapt both as individuals and as a nation” (Lee, 2006). These changes transform the work place and require workers in the 21st century to acquire new work attitudes, new knowledge and new skills, so as to remain competent and confident workers. Education has therefore been perceived in the Singapore society as an effective means to equip the young with the necessary values and attitudes to be life-long learners, as well

as to gain the knowledge and skills to stay relevant and competent (MOE, 2007a). In Singapore, as in other countries, globalization is a fact of life in this new millennium. To ensure that Singaporeans are able to cope with the changing world, at the 2007 National Day Rally, PM Lee envisioned that "[Education] is the best way to level up our society. Our aim is to give every child a top-rate education. Therefore, our emphasis is on the quality of all our schools in Singapore" (Lee, 2007). Education, thus, must equip the young with the necessary values and attitudes to be life-long learners, as well as gain the knowledge and skills to stay relevant and competent in the globalised world.

1.2.2 Pre-school Education in Singapore

Most Singaporean children aged between three and six receive pre-school education. They are either enrolled in a kindergarten setting or a childcare setting. Presently, two separate and independent policies and administrative systems regulate these two types of early learning sectors. Childcare centres are under the auspices of the Ministry of Community Development, Youth and Sports (MCYS) and are licensed under the Childcare Act (1988). In May 2009, there were 755 childcare centres licensed under the MCYS authority. Kindergartens in Singapore are pre-schools that are registered with the Ministry of Education (Pre-School Unit, 2009) under the Education Act (1987). In May 2009, there were 485 kindergartens registered with the Education Ministry. In this study, the terms 'pre-school' and 'kindergarten' are interchangeable.

Pre-schools in Singapore are not operated by the Government. The pre-school sector is privately run by profit-making and non-profit institutions. Many pre-schools ignore government's policies and have been quite autonomous in running their own programmes and services. However, in the last decade, three basic directions of change related to pre-school education in Singapore have occurred namely: the demographic crisis, the accountability movement

and the discussion on the quality of pre-school education. These are key factors that have caused governing authorities to re-examine their policies with reference to pre-school education and care in Singapore.

1.2.2.1 Government's position on pre-school education provision

In the last two decades, the Singapore Government has been playing a regulatory role in ensuring that pre-school operators meet basic standards of operation by registering kindergartens and licensing childcare centres. Pre-schools offer different pre-school education models and approaches for children aged below seven years. However, the principals of the pre-schools also set their own goals, philosophies and approaches. Parents are able to choose the centre they prefer for their child.

With the changes in the social, economic and political environments in Singapore and in other parts of the world, major policy developments and issues in pre-school education have emerged since 2000. After the announcement by the Prime Minister in 2000, Dr Wong, the then Senior Minister of State for Education, chaired a Pre-School Education Steering Committee, which focused on raising the quality of pre-school education in Singapore. She stipulated that although the Education Ministry would be interested in helping to raise the quality standards of pre-school education from the macro perspective, it would not be taking over the pre-school sector (Wong, 2000).

Several social and political viewpoints have influenced policies. Rust (2003) perceives policy formulation as a reflection of the values, underlying assumptions and intent of those who frame it. Goffin (as cited in Rust, 2003) describes two schools of thought. One school of thought asserts that "the child is at risk and therefore in need of saving so that the society as a whole will be able to sustain itself economically and socially" (Rust, 2003, p.155).

Policies based on this idea tend to be geared towards children of poverty. The Head Start project implemented in the US is one example.

A second school of thought views children ”as a resource whose rightful support and education will shape the society of the future” (Rust, 2003, p.155). Policies based on this school of thought tend to be geared towards free and/or compulsory education for all children, such as in Finland and Norway. For example, Dahlberg, Moss and Pence (1999, p.124) stated that Sweden has moved away from this notion of ”children at risk, a deficit concept and the role of institutions being to make good that deficit” and stated that Sweden’s emphasis now is on early childhood opportunities for all children.

In Singapore, the first school of thought mentioned here seems to be the underlying assumption of the Government. The former PM Goh noted that “the Government would provide some financial help to non-profit organizations so that fees would be kept affordable, in particular for children from lower income families” (Goh, 2000). The policies on early childhood education since 2000 have focused on providing directions and standards on areas such as curriculum, teacher training and funding provision. This position was further reiterated in 2005 by Chen Soo Seng, Minister of State for Education at the Parliamentary Debate (MOE, 2005). In other words, there are no public-funded pre-schools in Singapore like those in Australia, China, Korea, Malaysia, UK and USA, (UNESCO, 2006). In Singapore, pre-school education provision is in the hands of the private and community sectors and pre-school education is the choice of parents. At the operational level, the Singapore Government has not assumed responsibility for the provision of pre-schools. However, at the macro level, the Government provides policy directions, sets desired outcomes for pre-school education and implements projects to financially support new initiatives that help to raise the quality of pre-schools and, at the same time to ensure that fees remain affordable to all families.

1.2.2.2 Ethnic diversity and education policies

Since 1966, MOE has made bi-lingualism a mandatory requirement for the local education system, including pre-school education. This policy aims to address the need for inter-racial communication in English as well as the need to maintain the culture through the mother tongue. The amount of time that children spend speaking English as compared to their first language varies with their socio- economic background. To help children from non-English speaking and low income home backgrounds to increase their proficiency in English, a prototype project "Focused Language Assistance in Reading" (FLAiR) was implemented by MOE in 2006. This language programme provided focussed assistance to 82 selected kindergarten children who were identified to have problems with the English Language. At the parliamentary debate replies in February 2007, the preliminary assessment reported by the pilot participating centres stated that the children involved had benefited from this programme (MOE, 2007a).

National Education is a compulsory subject in the Singapore education system as it promotes Singaporean values and belief systems and helps the young generation to develop a good understanding of what it means to be a Singaporean. PM Lee in his National Rally Speech 2004, said that "… so even with wings, they will fly all over the world but come back and be a Singaporean in Singapore" (Lee, 2004). It is with this goal that kindergartens in Singapore include the acquisition of two languages and learning of National Education in their curriculum.

1.2.2.3 New initiatives related to pre-school education 2000-2007

Since 2000, the pre-school landscape has been evolving and changing more rapidly than ever before. Responding to socio-economic and global

changes, MOE has implemented various initiatives, aiming to raise the quality of pre-school education and give children a head start in their education and later life. A speech by the Senior Minister of State for Education in 2003 summarized the five leverage areas that the Ministry had embarked on since 2000 (Shanmugartnam, 2003). The Ministry introduced a set of desired outcomes of pre-school education in 2000, launched a curriculum framework in 2003, conducted a pilot research study on pre-school education between 2001 and 2002, announced new teacher and principal training requirements in 2002 and tightened its enforcement of kindergarten regulations. These policy developments have resulted in significant changes in various aspects of pre-school education in Singapore.

The Singapore Government initiatives have impacted both the childcare and kindergarten sectors in Singapore. For this study, the research was focused on the kindergarten sector and the issues and problems faced by the kindergartens that are registered with MOE.

a) Desired outcomes for pre-school education

As mentioned in Section 1.2.2.1, a Pre-school Education Steering Committee was formed in 1999 and comprised representatives from all sectors, academies and authorities in charge of the kindergarten and childcare sectors in Singapore. One of the initiatives that the committee recommended was to establish a set of desired outcomes for pre-school education. This had to be aligned with the desired outcomes set for primary and secondary schooling. The Committee, in March 2000, issued a statement explaining the “Desired Outcomes for Pre-school Education” in the Parliament during the Committee of Supply Debate FY2000. It stated that pre-school children should:

i. know what is right and what is wrong;

ii. be willing to share and take turns with others;

iii. be able to relate to others;

iv. be curious and able to explore;

v. be able to listen and speak with understanding;

vi. be comfortable and happy with themselves;

vii. have developed physical coordination and healthy habits; and

viii. love their families, friends, teachers and schools

These outcomes focus on the holistic development of the child, aim to help develop a happy and healthy child who is able to interact with others socially, who knows how to learn and is curious and enthusiastic about learning. To ensure that these outcomes are achieved, in 2001, MOE embarked on a project to design a curriculum framework that would be aligned with these desired outcomes.

b) A new curriculum framework for pre-schools

Most Singaporean children receive pre-school education either in kindergartens or childcare centres. These centres set their own goals and philosophies about their programmes. They provide a range of different education approaches for parents to choose from, such as the Montessori approach, a project-based curriculum, thematic or subject-based curriculum, teacher-centred teaching, textbook cum workbook-based learning or a combination of these approaches (Kwan, 2000; Sharpe, 2000). Some kindergartens model primary school practices, such as rote learning, completing repetitive worksheets, issuing lists of spelling words in English and the Mother Tongue language and solving problems from primary level assessment books (Kwan, 2000; Sharpe, 2000; Sharpe & Fan-Eng, 2000).

To promote developmentally appropriate learning for children in Singapore, the then Minister of State announced that the Education Ministry had embarked on a pilot study in 2001 and 2002 to test a developmentally

appropriate curriculum framework for pre-schools (Wong, 2000). The study involved about 2000 five year-old children of different backgrounds in 47 pre-school centres. At the launch of the Ministry's new curriculum framework in 2003, the Minister revealed the findings of the study, titled "The Pre-school Research Study" noting that the language spoken at home and socio-economic status had a bearing on children's gains in schools. The findings also indicated that children from disadvantaged homes benefited more from the new curriculum than from the teacher-centred and worksheet-based curriculum (Shanmugaratnam, 2003).

This new pre-school curriculum framework, "Nurturing Early Learners" (Pre-school Unit, 2003a), focuses on developing the child holistically, by learning through play and interaction with teachers and peers. Six key principles underpinned the framework, namely:

i. holistic approach;
ii. integrative learning;
iii. children as active learners;
iv. adults as interested supporters;
v. interactive learning; and
vi. play as a medium for learning.

These key principles are broad enough for principals and teachers to design their instructional activities to fit their pre-school settings. The curriculum framework emphasises the integration of learning activities of language and literacy, numeracy, gross and fine motor skills, aesthetic skills, self and social awareness and environmental awareness. There is also strong support for learning in play-based settings and an emphasis on quality interaction between adult-child and child-child.

In recent years, there has been considerable progress in understanding the importance of early childhood curriculum and programmes that aim to lay strong foundations for the long-term development of a child's attitudes and

knowledge (Schweinhart *et al*., 2005, 1993). However, many Singaporean parents perceive the pre-school experience as a preparation stage for formal schooling (Kwan, 2000; Sharpe & Fan-Eng, 2000). Many parents are not aware that early learning experiences allow children to extend their social interaction experiences beyond the home. In an early learning setting, children will learn about "self-awareness", "control of impulses", "working cooperatively", and "caring about oneself and others" (Elias *et al*., 1997, p.2). From interacting with their peers, children learn to establish close, cooperative and positive relationships with their peers (Haughland, 1996; Schaffer, 1996).

Teachers are the key to helping children go through the transition from their home cultures to their community cultures (Bronfenbrennar, 2005; Haughland, 1996; Rogoff, 2008; Schaffer, 1996; Schweinhart *et al*., 2005, 1993). Children need to learn to be disciplined within a community setting such as a pre-school, a classroom or a play setting. At pre-school, they begin to learn about what are acceptable and unacceptable social codes and behavior (Haughland, 2000, 1996; Schaffer, 1996). Providing children with ample opportunities to talk about these differences and to develop a respect for these differences are among the important goals of early learning experiences.

To support kindergartens that wish to adopt this curriculum framework, the Education Ministry has offered workshops and organised seminars for kindergartens where teachers have been presented with information that enables them to develop skills to design learning activities that are developmentally appropriate. Attendance at these in-service, pedagogy-related workshops for teachers, as well as management and leadership learning opportunities for principals has been on a voluntary basis.

c) Raising teacher requirements

In Singapore, the baseline for pre-school teacher academic qualifications is relatively low. Under the Education Act, a teacher could be registered if she/he obtained a GCE 'O' certificate with credits in three different subjects, including the English language. These pre-school teachers would then attend a pre-school teacher training course. As compared to many developed countries, such as Denmark, England and Australia, teacher trainees are high school finishers who complete their professional training through three or four years of training at institutes of higher education (OECD, 2001). Teachers are role models for young children, especially in the development of language and literacy skills (Montie, Xiang & Schweinhart, 2006; Sammons, Sylva, Emlbuish, Siraj-Blatchford, Taggart & Elliot, 2006; Sylva et al., 2004). In the study of ten countries by Montie, Xiang and Schweinhart, it showed that "Age-7 language improves as teachers' number of years of full time schooling increases" (2006, p.324). In EPPE research studies by Sammons, Sylva, Emlbuish, Siraj-Blatchford, Taggart and Elliot (2006), there are indications that higher qualifications of trained teachers have some impact in promoting young children's social behavioural development (2006, p.45).

With 95 percent of Singaporean children spending four to ten hours a day in kindergartens or childcare centres (MOE, 2007c), the responsibility for educating young children now seems to fall greatly on pre-school teachers and childcare givers. Raising teacher qualifications is perceived as the first step to raising the quality of pre-school education. In 2001, MOE announced new training requirements for principals and teachers (Wong, 2000). All kindergarten principals must attain a Diploma in Pre-school Education-Teaching and Leadership by January 2006. In addition, by January 2008, one in four teachers in a centre must have a Diploma in Pre-school Education-Teaching, and all other teachers must obtain Certificates in Pre-school Teaching. The reason behind setting these minimum requirements is to raise

the professional competence of pre-school teachers in Singapore. To improve the English proficiency level of teachers, in 2007, MOE (2007a) announced a funding provision for the next three years for about two-thirds of the kindergarten teachers, that is for 2000 teachers to attend a 40-hour English Language Communication Skills course.

To further improve the quality of pre-school education in Singapore, a pre-school education review committee, chaired by the Senior Parliamentary Secretary for Education completed a year-long review 2007. The committee's recommendations were approved. The new measures were announced on 4 March 2008 that from January 2009, all new pre-school teachers must obtain 5'O' credits with English at least B4 and Diploma in Pre-school Teaching. A voluntary quality assurance and accreditation framework will also be introduced to pre-schools from 2011. To support the teachers in upgrading themselves towards higher minimum teacher qualifications, additional funding support for eligible pre-schools and bursaries for teachers will be implemented (MOE, 2008b).

With the raising of teacher requirements, so too the operational costs were increased. The Ministry announced that eligible kindergartens would be given annual recurrent grants to recruit and retain trained teachers (MOE, 2008b; Wong, 2000). This action is to ensure that pre-school education remains affordable to parents and also to help pre-schools meet these new teacher qualification requirements by sending their teachers for training.

This new training framework applies to all kindergarten and childcare teachers. A Pre-school Qualification Accreditation Committee (PQAC) was also established in 2001 to oversee the quality standards of Certificate and Diploma pre-school teacher training courses (Pre-school Unit, 2009). A Skills Development Fund (SDF) from the Singapore Manpower Ministry was made available for pre-schools. Eligible trainees could obtain an 80 percent to 90 percent subsidy if they attend these courses.

d) Affordability and accessibility of services to pre-school education

As mentioned before, the Education Ministry reported in 2005 that 95 percent of children received formal pre-school education. In 2006, an inter-agency committee on Pre-school Education commenced an outreach programme to reach out to the remaining 5 percent of the pre-school age children not attending either kindergartens or childcare centres, especially those children from low income backgrounds (MOE, 2007a). The Committee targeted over the next five years to reduce this number to 2.5 percent of children not attending pre-school. In the replies to the Parliamentary Debates 2009, the Ministry revealed that about 2.5 percent of the children entering primary one without any pre-school education.

The Abecedarian study (Campbell, Ramey, Pungello, Sparling, & Johnson, 2002), the High/Scope study (Schweinhart *et al*., 2005, 1993) and related literature show that quality pre-school education provision usually has a positive impact on children from less privileged homes. Campbell, et al. (2002) reported that in the Abecedarian project, the curriculum emphased on the development in cognition, language and adaptive behaviour. The findings show positive impact on disadvantaged children with respect to their academic skills and increased years of post-secondary education (Campbell, Ramey, Pungello, Sparling, & Johnson, 2002; Ramey & Campbell, 1984). In another USA study on the Oklahoma's Universal Early Childhood Four-Year-Old Programme reported by Lamy, Barnett and Jung (2005) also found that low-income children who attended the programme scored higher on a test of early numeracy skills. They also had a better understanding of print concepts, such as recognizing signs around their neighbourhoods. These studies show that affordable and quality pre-school provision is advantageous for children, especially for those who are from disadvantaged families.

In addition to reaching out to families who do not enrol their children in pre-schools, the Singapore Government has also implemented various financial schemes to assist families from low income groups. The Ministry of Education

announced financial assistance of $600 per annum for lower income families who send their child to qualified kindergartens (Wong, 2000). As well as this financial assistance for kindergarten children, other financial assistance schemes for children have also been made available, such as the Childcare Subsidy, the Baby Bonus scheme and the Infant Care Subsidy (MCYS, 2007).

To assist kindergartens to attract and retain qualified staff and continue to keep the education fees low and affordable for neighbourhood children, MOE also announced that it would give eligible pre-schools annual recurrent grants of $15,000 per diploma trained teachers and $7,500 per certificate trained teachers (Wong, 2000). However, aligned with the Government's social integration stance, these Government grants are given to eligible kindergartens that are without religious and/or ethnic-affiliation.

In terms of proximity to children, the PAP Community Foundation (PCF) Education Centres are most accessible as they are located in the void decks of housing flats in various housing estates. According to the MOE website on fees information (Pre-school Unit, 2007), most PCF education centres offer the lowest monthly fees as compared to the kindergartens that are run for profit and other community-based religious/society affiliated types of kindergartens (Table 5.1 in Section 5.2.1, Chapter V). The then Minister for Education and Finance (Shanmugaratnam, 2006) on 19 May 2006 said that "PCF centres are an essential part of how we level up opportunities early in life. Located in void decks of the Housing Development Board (HDB) apartment blocks, and charging an average fee of $82 [per month] (ranging from $38 to $145), PCF kindergartens cater to children in the heartlands. …Today, PCF caters to about 48 percent of all children enrolled in kindergartens and childcare centres".

Besides the PCF community-based kindergartens, among the 485 MOE registered kindergartens in 2009, about one-fifth was run by private profit-

making institutions, while another one fifth was affiliated to religious or society-linked kindergartens.

1.2.3 Findings on Early Learning

Various initiatives introduced by the Singapore Education Ministry are the results of noting the various brain research and the empirical studies about how young children learn. Reports and reviews conducted by Campbell *et al*. (2002), Elliot (2006), Frede (1995), Hayes (2000), Lamy, Barnett and Jung (2005), Scheweinhart *et al*. (2005, 1993), Sylva (1996) and the NICHD studies on early childhood in USA (2006, 2002, 2000a, 2000b, 1998) concluded that a quality early childhood environment is a key predictor of readiness for schools and later life.

1.2.3.1 Brain research and early learning

In the last two decades, the development of brain imaging technologies allowed neuroscientists to observe the growth and development of a young child's brain. Neuroscientists have now validated what many early childhood educators and child psychologists have believed for years: the belief that a caring and nurturing approach of the care-giver and meaningful play experiences significantly affect the brain development of a young child (Kelman & Sharp, 2003; Leppo, Davis & Crim, 2000; Nash, 1997; Puckett, Sue & Davis, 1999).

Perkins (1999) quoted the findings of neurobiologist Marian Diamond that a human brain becomes wired at an astounding rate during infancy and in the early years of the child's development. These connections are shaped by specific types of experiences that children go through during their early years of development. Connections that are rarely or not used during the early

years disappear. In other words, stimulating experiences for young children are needed to develop the brain as fully as possible. If a child is deprived of a stimulating environment, some connections of his/her brain may never be formed.

The American Academy of Pediatrics (1999, p.6) advised that the "right stimuli and a conducive environment are important for the optimal development of a toddler's brain". Elliott (2006, p.21) summarized the research evidence of five findings on the impact of early experiences on child development as follows:

a) First, early experiences influence the cognitive and emotional development of a child.
b) Second, healthy early development relies on nurturing and a long-lasting relationship.
c) Third, school readiness is affected by how a child thinks and feels at early stage.
d) Fourth, due to changes in society, the needs of many young children are not well met.
e) Fifth, early intervention is necessary, especially for disadvantaged children.

In recent studies in USA by the Harvard University's Centre, the National Scientific Council on the Developing Child (2007) which describes how the brain architecture is constructed and competence is built over time. One of the core developmental concepts is that "all aspects of adult human capital, from workforce skills to cooperative and lawful behaviour, build on capacities that are developed during childhood, beginning at birth" (2007, p.5). It also noted that "both brain architecture and developing abilities are built from the bottom up, with simple circuits and skills providing the scaffolding from more advanced circuits and skills over time" (2007, p.7).

Studies on brain development have supported the long-standing belief of early childhood professionals that a stimulating, responsive, enriching and interactive environment contributes to effective learning and effective early interventions. These interventions can have an impact on children's overall learning (Dahlberg & Asen, 1994; Karoly, Kilburn & Cannon, 2005; Katz, 1993; Sylva, 1996; Scheweinhart *et al*., 2005; Scheweinhart & Weikart, 1998; Winter, 2003).

1.2.3.2 Empirical studies: Quality programmes and early learning

Stimuli-rich environments that impact brain development and cognitive development of a child refers to classrooms that are filled with pictures, music, books, toys and apparatus, as well as discovery corners filled with materials like leaves and rocks, and tanks of fish and insect collections (Harms, 1992). This stimulating, responsive, enriching and interactive environment also means that teachers build on children's interests and prior experiences, provide them with learning experiences that are rich, meaningful and relevant to them by giving them opportunities to explore, inquire and invent. The following projects and studies exemplify the importance of quality early learning environment and programmes.

The High/Scope Perry Project (Scheweinhart *et al*., 2005; Scheweinhart, et al., 1993) found that young people from disadvantaged homes experienced fewer emotional problems and committed fewer criminal offences if they had attended a pre-school programme based on child-initiated learning activities. Sylva (1996) conducted a similar study in Portugal and concluded that nursery children in primary schools adopting the High/Scope approach, that is a more child-centred learning approach, had better outcomes than children who had attended a programme based on teacher-centred, direct instruction. These children were better in "reading and writing, higher self-esteem and lower anxiety than the matched control group of children" (1996, p.3). A

study by Mashburn *et al*. (2008) found out that quality teacher-child interactions can facilitate children's school readiness.

In UK, the Effective Provision of Pre-school Education Project (EPPE) studied the cognitive and social development of children. In this study, Sammons *et al*., (2006) and Sylva *et al*., (2004) reported that, compared to those with no pre-school experience, children who attended pre-school education in England showed better cognitive and social skills. Similarly, Samuelsson, (2004, p.11) noted that Swedish educators provided high quality early childhood education with the view to developing better social behaviour and more productive citizens.

In Singapore, Kwan (2000) conducted a study of 16 pre-schools and found that those pre-schools that provided rich language learning environments and creative experiences that created ample opportunities for social interaction, had children who showed fluency in oral expression and greater engagement in learning. As mentioned in Section 1.2.2.3 that MOE had embarked on a study in 2001-2002 and at the launch of the new curriculum framework in 2003, the former Education Minister, Mr Shanmugaratnam (2003) reported the findings that the language spoken at home and socio-economic status had a bearing on children's gains in schools. He also reported that pupils from the disadvantaged homes benefited more from the more child-centred new curriculum than the teacher-centred and worksheet-based curriculum.

In brief, these neurological research and pedagogical studies enable early childhood professionals and practitioners to be better informed of and equipped with the knowledge and skills related to child development. Copple (2003, p.764) suggests that literacy and numeracy, which have been the focus of early childhood learning, are just the "tip of the iceberg in early education", because literacy is dependent on "other vital capacities that should be fostered during the early years" such as a disposition for learning, emotional literacy and social competency. Hence, early years learning should not be limited to academic preparation for school alone, but should prepare

children for life. Independence, curiosity, persistence, flexibility, an inquiring mind and a love of learning are essential attributes that children should be given opportunities to nurture and cultivate (Copple, 2003; Laevers, 2005b, 1994; Pascal, 2001; Pascal & Bertram, 2005, 1999a; Schweinhart *et al*., 2005; Schweinhart *et al*., 1993).

1.2.3.3 Need for improving the level of professionalism

The qualifications and training of teachers are essential factors in high quality pre-school provision. The OECD report (2001, pp.96-100) supporting this consideration stated that high levels of professionalism, intrinsic motivation and self-regulation among practitioners in the sector are key drivers for continuous professional growth of teachers. Improvements in pre-school quality standards have to be driven by the pre-school sector itself. The curriculum framework and regulatory systems are external forces that ensure a basic quality of service. These are necessary, but are not enough to ensure that the pre-school sector achieves high quality standards. A long-lasting, effective and sustainable effort has to come from the practitioners themselves. Recently in Singapore, there has been a degree of concern that inspectorial type systems of quality control have not been all that effective in the past and that a system based on self-monitoring could be more effective, especially in early childhood education.

Munton, Mooney and Rowland (1997) studied 119 childcare centres in UK and found out that self-assessment could be a method of monitoring, evaluating and enhancing the quality of service provision in early childhood settings. The Effective Early Learning (EEL) project in England (Pascal & Bertram, 2000, 1999a, 1999b, 1997a, 1997b), which developed a set of tools and procedures for self-assessment, produced a development framework that was found to be a cost-effective strategy to help raise the quality standard in various early learning settings. A study by Yuen (2004) monitored a school-

based project in five kindergartens in Hong Kong and found out tha "professional development that builds around collegial interaction" had a positive impact on teaching practices (Yuen, 2004, p.143).

In response to rapid educational changes, Fullan (2001), Handy (2001), Senge (1990) and Senge *et al*. (1999, 1994) recommended that organisations, including educational institutions, should develop a learning culture. With such a culture, working individuals would constantly look for improvement in the organisation and for themselves. In a learning organisation, practitioners would more likely collaborate with each other and have a greater awareness and better understanding of what quality means. They could then translate the meaning of quality into operational terms for classroom practices. Based on these beliefs, hypothetically, self appraisal could be an appropriate platform for practitioners to engage in reflective thinking processes. In such processes, teachers and principals can share their experiences and learn collaboratively from one another. After some consideration, it is likely that their awareness will be heightened as to why they do what they do and how they can improve their daily practices. Over a period of time, this reflective process will aid in their self-improvement (Dewey, 1933; Fullan, 2001, 2000, 1993).

1.2.3.4 Need for quality assurance in pre-school education

In 2000, the then Singapore PM Goh recognised that the first few years of a child's life are a period of accelerated physical development. He stated that "good pre-school education can help the longer-term cognitive and social development of our children" (Goh, 2000). He then announced that the Government would provide funding to assist non-profit, community-based institutions and children from lower income families. As a result of increasing public funding and public awareness of the importance of early learning, quality control and quality assurance for pre-school education became an

important agenda item for politicians, funding agencies, educationists and parents in Singapore, as in many other countries.

Accountability is fundamentally asking the question of what has been achieved in particular situations and how well this has been achieved within the resources provided and the constraints experienced.

Ng (2008) describes the need for quality assurance in Singapore education system in early 2000. In Singapore, high investment in education enhances human capacity underpinning Singapore's economic growth. The need for quality assurance in early childhood education became evident in 2003. Singapore was affected by the Severe Acute Respiratory Syndrome (SARS) between March and May 2003, at which time stringent public health control measures were applied. The Education Ministry (MOE, 2003c) announced a health-related closure for schools, including some kindergarten closures as some pre-school operators had not obtained the statutory clearance from relevant authorities with reference to meeting health and safety standards. Tightening the enforcement of regulations against unregistered operators was critical during the SARS outbreak, as this ensured that all children in kindergartens were safe and not exposed to any health-related risks.

Enforcement of regulations by the regulatory authorities assures parents that their children are placed in premises that meet the statutory requirements, standards of safety and health, teacher requirements and offers a suitable programme for young children (Pre-school Unit, 2007a). While regulations go some way in assuring that operators meet the basic requirements, regulations alone will not raise the quality standards above this basic minimum standard.

1.2.4 Self-Evaluation as a Means for Quality Improvement

In this study, 'self evaluation' is a generic term that is interchangeable with the terms "self-assessment" and "self-appraisal". The basic element of

these terms is reflection, looking back and identifying strengths and areas for improvement. The theme of self-evaluation will be elaborated in Section 2.3, Chapter II.

There are a number of methods for assessing the effectiveness of child learning in early childhood services, for example, implementing achievement tests, practising site-inspections, self-appraisals, self-assessment and externally validated schemes, accreditation of programmes and services and accreditation of teacher training courses. In UK, the method of evaluation of early childhood programmes was a topic for debate in 1990s (Pascal, 2001). Some areas to be assessed included physical facilities, adult-child ratio and teacher training. There were concerns from Moss (1994), and Dahlberg and Asen (1994) about the evaluation of quality becoming too focused on technical procedures. They cautioned that when conducting an evaluation using a predetermined norm to compare the goals to the outcomes, the process variables, such as child involvement quality and teacher interaction with children, which are good indicators of quality learning, should not be neglected.

In Australia, England and USA, self-evaluated and externally validated schemes have been in place for some time to ensure high quality of pre-school provision. Centres conduct self-appraisals as a first step in their participation in quality assurance schemes. The governments of these countries have developed incentive schemes to encourage kindergartens to adopt required practices. In Australia, accreditation of day care services is linked to government funding (NCAC, 2004; Winter, 2003).

1.2.4.1 Challenges for promoting self-evaluation in Singapore pre-schools

Practising self-appraisal does not guarantee that early learning institutions will reach high quality standards of operation. Practitioners have to make a commitment to quality improvement. Quality in services also demands high quality leadership in order to carry out and monitor the improvement plans using effective strategies (Barth, 1990; Murphy, 2005; Yuen, 2004).

a) Introducing self-appraisals to kindergartens

As mentioned earlier, with the changing landscape of pre-schools in Singapore, professionals and practitioners at all levels have encountered great challenges as they contribute to the provision of an adequately prepared work force. Self-appraisal is, however, not a common practice among kindergarten teachers in Singapore. To promote self-assessment practices, there is a need for the promulgation of self-appraisal related knowledge and skills for the centre leaders and teaching staff.

In 2003, the Education Ministry developed a self-appraisal instrument – 'PEAK: Promoting Excellence At Kindergartens' (Pre-school Unit, 2003b) to encourage kindergartens to conduct self-appraisals. In 2006, the Ministry revised the PEAK instrument and issued to all kindergartens a document titled "The Standards for Kindergartens" (Pre-school Unit, 2006a) to serve as a guide for users to focus their evaluation on six key domains, namely Leadership, Administration, Staff Training and Development, Curriculum, Planning, and Care, Safety and Health. According to the Pre-school website (Pre-school Unit, 2009), workshops were organized to equip kindergarten leaders with knowledge and skills to conduct their own centre's appraisals. The website also shows that almost 90 percent of the kindergartens had

declared that they practised self-appraisal for they considered the conducting of self-appraisal as the first move in the journey towards quality improvement.

b) Challenges faced by kindergarten leaders

Many kindergartens and childcare centres in Singapore are located in housing estates, community centres or converted bungalow houses, and provide educational programmes to a small number of children living in those neighborhoods. Many kindergartens in Singapore have an enrolment ranging between 100 and 200 children as compared to a primary school with an average enrolment of over 1000 children. They operate like cottage industries as they tend to employ a small number of teachers who usually only met the minimum required academic and professional qualifications. As noted by Rodd (2006), in many countries the professional image of early childhood practitioners is poor. In Singapore, pre-school teachers are also not well regarded as professionals as compared to their counterparts teaching in formal schools (Today Voices, 2007).

The kindergarten, however, has moved from being no more than a desirable extra, to a centre with a critical role in the process of a child's development. Kindergarten principals are increasingly required by the Education Ministry to be effective instructional leaders as well as organisational leaders. Principals have to guide teachers to design curricula and instructional activities in an integrated manner that enables the holistic development of a child. Equally important is for principals to ensure that curriculum planning creates opportunities for a smooth transition for children moving from nursery to kindergarten and from pre-school to primary school.

With increased Government funding, there has also been a demand for greater accountability for how well early learning institutions are helping children to achieve the targets set for these young learners. Many kindergartens and leaders in the sector are finding difficulty in adjusting to these new changes and higher expectations from parents and society.

Developments in Singapore policy since 2000 have resulted in greater demand for more complex roles than kindergartens have previously had to perform. Former Singapore Education Minister Mr Teo Chee Hean (MOE, 2000b), in the MOE Work Plan Seminar in 2000, said that “More than just motivate, principals must empower our teachers to face present and future challenges and through their constant search for excellence, encourage, inspire and draw out the very best in both individuals and teams. They can bring about a fundamental change in people's beliefs and behaviour, and instill the qualities of innovation and risk-taking by rewarding initiative, forgiving mistakes, and viewing error as a learning opportunity. Principals can create a community around themselves where such beliefs can be practised, expressed and nurtured. Schools can then serve as incubators and communities of good ideas and practice” (MOE, 2000b).

As a result, educators now are searching for more effective approaches, strategies and methods to ensure that children receive quality learning as well as be accountable for funding. Of course, kindergarten leaders can either adopt a wait-and-see attitude, then react to government mandates for accountability should they come, or begin to engage their staff and learn together to create meaningful change and actual measurable improvement.

1.3 RATIONALE FOR THE STUDY

My interest in the research topic evolved as a result of my work as a regulator in the Education Ministry, involved in reviewing pre-school education-related policies and implementing new initiatives to raise the standards of pre-school education in Singapore. As an early childhood professional, there are two outstanding topic areas I would like to address: accountability and professionalism. First is the demand for greater accountability. What activities should kindergartens and childcare centres carry out to meet this demand? How well are these institutions helping

children to achieve the targets set for them? Second is the demand for a greater sense of professional ownership of the services. How should teachers work with children? Are teachers helping children develop holistically? It seems to follow that such ownership would require professionals to acquire positive attitudes and equip themselves with the appropriate knowledge and skills to help bring about high quality learning for children.

Thus, this research was undertaken for the following reasons:

Firstly, more and more people believe that human capital investment should start with young people as early as possible (Kelman & Sharp, 2003; Knudsen & Heckman, 2006). As mentioned in Section 1.2.1, Singapore is a small island nation with virtually no natural resources. It therefore needs to maximise the potential of its human resources.

Secondly, research over the last two decades has revealed how a child's brain develops, what this means for child learning, and how childhood learning may shape adult lives. At the annual meeting of the Inter-American Development Bank on 'Breaking the Poverty Cycle: Investing in Early Childhood' on 14 March 1999, Professor Amartya K. Sen, the 1998 Nobel Prize winner for Economics, advocated that investment in early learning is the way to break the poverty cycle (Sen, 1999). James J. Heckman, 2000 Nobel Prize winner for Economics, also highlighted that "early years are foundational for a full range of human competencies and are a period of heightened sensitivity to the effects of both positive and negative experiences" (Knudsen & Heckman, 2006, p.17).

Many studies (Campbell *et al*., 2002; Kelman & Sharp, 2003; Lamy, Barnett & Jung, 2005; Leppo, Davis & Crim, 2000; Nash, 1997; Puckett, Marshall & Davis, 1999; Ramey & Campbell, 1984) have recognised that quality provision of pre-school education will make a difference in people's lives. In UK, the Effective Pre-School and Primary Education (EPPE) project (Sylva *et al*., 2004) showed significant links between higher quality provision and

better child outcomes. Hence, the provision of high quality early learning experience is the key to these better outcomes.

Thirdly, it is the issue of accountability. The results of many studies (Knudsen & Heckman, 2006) have encouraged the governing authorities in many countries, including Singapore, to increase their investment in quality pre-school provision for they have proven that early learning is the best strategy for early human capital development. Public funding is held accountable to the wider community. The provision of quality learning experiences is the key deliverable that is expected from the funding authorities and parents (Pascal, 2001).

Pre-school service providers and practitioners are, in turn, pressured to perform and meet the expected outcomes. From a professional perspective, the researcher contends that there is a need to look for means to improve the service standards.

Fourthly, the most important reason is that the notions of self-reflection and collaborative learning within an organisation are of benefit to the organisation's members. This is especially so to their professional growth and personal capability in dealing with changing demands in their working profession (Barth, 1990; Fullan, 1992; Johnson & Johnson, 1994). If a pre-school plans to develop its teachers to meet the challenging goals and demands ahead of them, an important place to start is to create learning opportunities within the centre for teachers to participate in collegial professional development (Fullan, 2001, 2000, 1992).

Through this study, I examined effective strategies and useful instruments that would be helpful to pre-schools to improve their programmes and raise service standards.

1.4 AIMS OF THE RESEARCH

In Singaporean pre-school settings, structural characteristics of a centre, such as group size, adult-child ratios, space, materials and curriculum, are not the same or equally developed in all pre-schools. However, with public funding and social changes, some measures have been taken to improve the situation. A major concern regarding Singaporean pre-school education is the process quality of child learning. Local studies by Tan-Niam and Quah (2000) reflect that little research and no longitudinal projects have been done on the process quality of child learning in Singapore.

1.4.1 Broad aims of the study

Therefore, the broad aim of this study was to ascertain whether or not a self-appraisal and development model, similar to the method adopted by the Effective Early Learning Project (Pascal & Bertram, 2005, 2000, 1997a, 1997b) could be applied to pre-schools in Singapore. The specific aims of the research study were:

a) to explore the feasibility of using a self-appraisal process and evaluation tools for quality improvement of a centre.
b) to evaluate the effectiveness of a self-appraisal and development framework for practitioners' professional development.

The feasibility and effectiveness of adopting a self-appraisal and development framework for quality improvement was assessed using two process variables and one enabler of quality attributes:

a) levels of child involvement in tasks based on learning theories on quality learning in a child;
b) quality of adult interaction with children based on developmental psychology approaches to relationship building; and

c) a rich and stimulating setting based on constructivist approaches to teaching and learning.

1.5 RESEARCH QUESTIONS AND DESIGN

The purpose of this research was to apply, in participating pre-school settings in Singapore, a self-evaluation and development framewok similar to the framework used by the Effective Early Learning (EEL) project. This study modelled the EEL project by following its procedures and using two of its research tools to measure process quality. The feedback provided by the principals and teachers during the piloting phase showed that the ten dimensions of the input variables recommended in the EEL project were found to be too complex for the local pre-school settings. The selected kindergartens were familiar with the Early Childhood Environment Rating Scale (ECERS) as Professor Thelma Harms had previously conducted several workshops on ECERS in Singapore. Hence, ECERS was considered appropriate for use in the participating pre-schools to appraise their centres.

1.5.1 Research Questions

Based on the broad aims of the research, this study sought answers to the following specific questions:

a) Primary questions

   i. In what ways, if any, would the adoption of a self-evaluation and development framework improve the level of child involvement in the selected pre-schools?

ii. In what ways, if any, would the adoption of a self-evaluation and development framework improve the level of adult engagement with children in the selected pre-schools?

b) Secondary questions

iii. In what ways, if any, would the adoption of a self-evaluation and development framework enhance teachers' capabilities and skills in the selected pre-schools?

iv. In what ways, if any, would the adoption of a self-evaluation and development framework improve leaders' capabilities and skills, in turn help effect organisational change in the selected pre-schools?

1.5.2 Assumptions

This study was based on several premises and beliefs that need to be clearly stated at the outset. The research focus and research design with these premises and beliefs have been framed as follows:

a) Self- appraisals to be perceived as part of a continuing system, not one-off events

Every element of quality in a pre-school has to be seen as part of a system. For example, child related displays and furnishings are part of the dynamic component of a centre. These elements are part of a quality learning environment and are crucial for quality child learning. Bronfenbrenner (2005, 1994, 1976) recognised that reciprocal interactions between the child and the various contextual surrounding environments shape the child's development and behaviours. He said that "child development takes place through

processes of progressively more complex interaction between an active child and the persons, objects, and symbols in its immediate environment." He also emphasized that "to be effective, the interaction must occur on a fairly regular basis over extended periods of time" (Bronfenbrenner & Morris, 1998, p.996). Seeing self-appraisals as a system, not a single event supports this contextualized theory of Bronfenbrenner. This belief is also aligned with the ecology of schooling advocated by Eisner (1991, pp.72-80) that a mix of interacting factors with five dimensions, namely: intentional, structural, curricular, pedagogical and evaluative, contributes to quality schooling. Using different lenses to look at the quality issue, from the micro, exo, meso to the macro level, one can gain a more comprehensive understanding of the concept of quality.

b) Self-appraisals to be people-oriented, not technically focused

Self-appraisals and externally validated schemes and accreditation systems are widely adopted systems in Australia, UK and USA for raising the quality of early childhood related services (OECD, 2006). With funding incentives, centres conduct self-appraisals as the first step of their participation in quality assurance. In the business world, self assessment and external validation practices tend to become technical procedures for capturing data and evidence of quality provision. The goal of self-improvement is consciously or unconsciously neglected. It is through a reflective process that practitioners can gain greater awareness of why they do what they are doing.

Conducting self-appraisals with a people-oriented approach will help teachers better understand the elements of quality and they may acquire a common language and vocabulary to describe the meaning of 'quality'. They may also increase understanding of environment quality at an operational level. Through reflective thinking and dialogue, practitioners become more conscious of how quality improvement could be translated into day-to-day practices (Munton, Mooney & Rowland, 1997).

c) Self-appraisals to be perceived as part of a journey, not the goal

Self-appraisals should be taken as a journey in which centres move to the next level of competence. It is an on-going, reflective process that should eventually be incorporated into the programme schedule, management and work plans of the centres. It is a process in which all members in the organization should be involved. It is a journey in which the participating staff will be enriched personally and professionally.

1.5.3 Research Design

In brief, as shown in Figure 1.1, this study sought a more feasible and effective strategy to raise the quality of early learning in selected pre-schools in Singapore. Through the reflective process of self-appraisal, members in the organization may expand their repertoire of skills and gain greater awareness of what quality teaching is and why it is essential for quality child learning.

As stated in Section 1.5, this study modelled the procedure and framework of the Effective Early Learning (EEL) project (Pascal & Bertram, 2000, 1997a, 1997b). Figure 1.1 shows the preliminary framework which was drafted with two parts: the goals and the process.

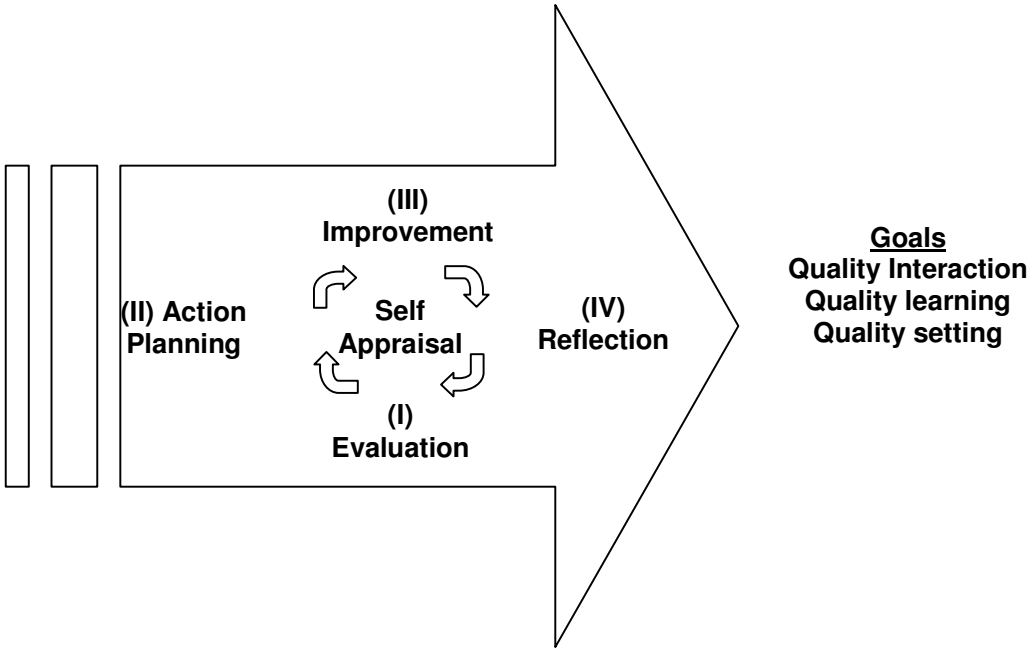


Figure 1.1 Self-Appraisal and Development Process – A Preliminary Framework

A centre using the self-appraisal process aims to improve the quality of its setting, teaching and learning outcomes. In the self-evaluation and development process, the centre would first evaluate its environment and practices through data collection; next it would identify its strengths and areas needing improvement and develop action plans. These would then be implemented and then reflected on in order to inform if improvement had occurred or further modifications were needed. It was intended that those involved in this self-appraisal process would expand the learning capacities and leadership qualities which were considered essential to help the centre improve standards.

Initially, I designed this preliminary framework which sought to embrace the interactive nature of self-appraisals and the variables that contribute to the quality improvement that kindergarten participants experienced. Taking a constructivist perspective throughout this research journey, I modified the

framework as the study progressed. The modified framework is found in Chapter VII, Figure 7.1. This modified framework incorporates the key features of the evaluation cycle and provides a more comprehensive framework based on the experiences reported in the case study, which was the approach adopted in this research.

1.5.3.1 A case study approach

As noted earlier, this study modelled the framework of the Effective Early Learning (EEL) project (Pascal & Bertram, 1997). Each EEL centre went through a self-evaluation process leading to action planning and improvement. Through a four-phase process, data on process variables were collected as these data were linked to quality learning. One of the reasons for adopting a case study approach for this study was that there are various advantages of using such an approach. Cited by Bassey (1999), Adelman stated four advantages of using a case study (p.23).

a) First, the approach is “strong in reality”.
b) Second, it allows “generalizations” with purposeful sampling.
c) Third, it recognizes the “complexity of the reality”.
d) Fourth, it is “a step to action”.

This study intended to explore, discover and find out if it would be feasible and effective to improve an early learning centre by implementing a self-appraisal and development process. In brief, this study was an exploratory journey for me to gain new understandings and new knowledge about quality improvement.

1.5.3.2 Participants in the study

In 2005, there were 501 MOE registered kindergartens, including community-based organisations, namely the PAP Community Foundation (PCF) that operated 289 centres located in all the public housing estates in Singapore. The remaining 212 kindergartens were religious-affiliated, society-linked or private commercial institutions. Purposeful sampling was used in selecting the study sample. To obtain a more typical-case sample for analysis, 10 kindergartens were invited to participate in the study in 2005 based on a set of criteria. An initial proposal was to involve approximately 60 to 70 teachers and 500 children from the selected pre-schools. The study intentionally excluded the profit-making, commercial-type of kindergartens. The consent forms and an information sheets were prepared to issue to the advisory boards, the principals, the teachers and the parents of the participating children (Re: Appendices A-F). It was also made clear to the participants that they could withdraw from the study at anytime. The researcher ensured that any participant that withdrew their consent and participation at any time would not affect their status now or in the future. This statement was included and highlighted in the information sheets and the consent forms.

1.6 SIGNIFICANCE OF THE STUDY

In Singapore, there were, to the best of my knowledge, no studies on the self-assessment and development frameworks as a means for quality improvement in pre-school settings available to guide pre-school practitioners, teachers and principals. Research clearly indicates that self-reflection and collaborative learning within an organisation benefit the organisation's members with reference to their professional growth and personal capability in dealing with changing demands in their working

profession. Self-reflection and collaborative learning also contribute substantially to raising quality standards of the child-related services that the organizations provide (Barth, 1990; Brophy & Statham, 1994). If a pre-school intends to develop most teachers to meet the challenging goals and demands ahead of them, an important place to start is to create learning opportunities within the centre for teachers to participate in collegial professional development. Using self-assessment practices as a means to improve the settings, teachers through this reflective process not only understand what quality means, but also are able to incorporate it into their daily practice.

This study gathered information about strategies; procedures and instruments that can help pre-schools to improve their programmes and service standards. The findings may provide some policy implications for means and strategies in achieving a high quality for pre-school education in Singapore.

1.7 LIMITATIONS OF THE STUDY

A case study was designed to generate qualitative and quantitative feedback on the feasibility and effectiveness of using a self-appraisal model for quality improvement. There were several methodological factors that may have limited the study.

Firstly, although this study set criteria for purposeful sampling, it still depended on voluntary participation. Every effort was made to encourage full participation through direct meetings, emailing and telephone contacts. However, teachers, pupils and/or centres could at any time drop out of the population sample due to personal and unforeseen circumstances. For example, one of the centres dropped out in the second year of the study due to administrative re-organisation of the centre. Another centre left the study because the centre was involved in an intervention programme. Some teachers resigned and new teachers were recruited in some of the centres.

Secondly, although all teachers in the participating centres went through training, received site supervision and mentoring, this study may have been limited by the understandings and attitudes of the participating practitioners as they were from diverse backgrounds in terms of academic and professional qualifications and years of working experience, including newly recruited teachers.

Thirdly, though the criteria for purposeful sampling were established for the study to select typical-cases, the findings may only be applicable to these participating pre-schools. The results may have limited generalisability. This issues related to 'generalization' of the findings are further discussed in Chapter IV and Chapter VII.

Fourthly, a self-appraisal and development process is complex. This process involves thought processes, attitudes, interpersonal interaction and communication that are complex tasks. However, the researcher and participating teachers and principals may not have maintained a completely objective perspective. Putting aside personal biases, attitudes and beliefs during the research study is not always possible.

1.8 OPERATIONAL DEFINITIONS OF TERMS

Throughout this study, terms used are given operational definitions in relation to Singapore context as follows:

a) Pre-schools

Pre-schools in Singapore are perceived as educational institutions that offer children pre-school education programmes prior to formal schooling. In Singapore, compulsory education starts from age six. Most children at age six or below will likely have received their pre-school education in a kindergarten, a childcare centre or an education centre focusing on subject-based

enrichment programmes. In this study, the term pre-school refers to kindergartens and childcare centres.

In a kindergarten setting, a pre-school provides a structured and mini school-like programmes and activities for children aged between four and six. It offers regular learning programme every day, five days a week, following the main stream school system of 40 weeks a year. Most kindergartens operate three to four hour daily programmes in two sessions, morning or afternoon for children in class groups of nursery, kindergarten one and kindergarten two.

b) Pre-school education

In Singapore, Pre-school education is commonly used by both kindergartens and childcare centres to refer to education programmes offered to children age between four and six before they enter formal schooling. These programmes include learning areas that are advocated in the new curriculum framework (Pre-school Unit, 2003), such as language and literacy, numeracy, self and social awareness, environmental awareness, arts and aesthetic expression, and gross and fine motor skills. For this study, pre-school education (PSE) was used interchangeable with early childhood education (ECE).

c) Pre-school practitioners and professionals

In a typical pre-school, such as in a kindergarten, the staffing profile includes a principal, teachers and support staff. In this study, pre-school practitioners referred to all staff including directors, supervisors, principals, teachers and teacher aides who are in close contact with children in a pre-school setting.

Principals in Singapore kindergartens undertake the roles of instructional and organisational leaders. The leader with a similar role and function in a child care centre is called a supervisor. In a larger organisation, directors, deputy directors, managers and branch administrators are some terms used to refer to personnel in a leadership position.

Teachers in a pre-school are also curriculum developers and facilitators for child learning. They are practitioners who have the expertise in specialized areas related to early childhood education including trainers, child psychologists, specialists, academia and regulators.

d) Self-evaluation

Self evaluation was used interchangeably with the terms self-assessment and self-appraisal. Self-evaluation has a strong component of reflection. It is a part of the process of questioning the day-to-day practices of individuals and organsiations, and implementing changes as a means to self-improvement. At the practitioner level, teachers assess critically their own teaching practices and strategies so as to find out if objectives set for child learning are accomplished. At the centre level, self-evaluation practices encourage involvement of teachers and stakeholders to systematically review the entire programme and services to ascertain if the goals, mission and vision set for the children by the centre are well achieved.

e) Reflective practice

Reflection is a process of looking within oneself. For this study, according to Dewey (1933), reflective practice was seen as ”an active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends” (p.9).

f) Professional development

Development appears in the title of the study and refers to professional development and growth of practitioners in the settings. Professional development includes pre-service and in-service training, formal and informal, structured and less structured learning programmes that help practitioners grow professionally, and help enhance the capabilities and skills of pre-school practitioners. In this study, the definition from Day (1993) was adopted:

> *Professional development consists of all those conscious and planned activities which are intended to be of direct and indirect benefit to the individual, group or school and which contribute, through these, to the quality of education in the classroom. It is the process by which, along and with others, teachers review, renew, and extend their commitment as change agents to the moral purposes of teaching; and by which they acquire and develop critically the knowledge and skills essential to good professional thinking, planning and practice with children, young people and colleagues through each phase of their teaching live (Day, 1993a, p.2).*

g) Quality improvement

In this study, quality improvement was defined from three perspectives. (i) From a child learning perspective, improvement on child involvement level was taken as a critical indicator of quality of learning. (ii) From a teaching perspective, adult engagement, specifically the three attributes of quality interaction, i.e. sensitivity, stimulation and autonomy, were considered as appropriate indicators of quality of teaching. (iii) From an environment perspective, environmental setting was perceived as an essential indicator of quality of setting. Chapter III gives a detailed discussion on these indicators of quality.

h) Adoption

The ideas for the study originally stemmed from the Effective Early Learning (EEL) project (Pascal & Bertram, 2000, 1997a, 1997b), which included four-stage cycle of self-evaluation using a set of procedures and evaluation tools for centre improvement and staff development. To consider the local context and cultural differences, for this study, the term ‘adoption’ referred to adopting the key features of the EEL model. These are the four-stage cycle of evaluation, the case study approach and the two measuring tools: the Child Involvement Scale and the Adult Engagement Scale.

1.9 CHAPTER SUMMARY

Technological complexity, modernization and globalization require workers to periodically acquire new work attitudes, knowledge and skills to remain competent and confident. Singapore is like other countries where the social and economic pressures, coupled with the findings of brain research and pedagogical studies have made the nation's policy makers, the politicians and subsequently the providers realize the importance of investing in quality pre-school education.

Singapore's Education Ministry, since 2000, has implemented various initiatives aimed at raising the quality of pre-school education and giving children a strong head start in their development. With public investment, accountability comes to the forefront. Pre-school principals and teachers in Singapore are overwhelmed with the many new initiatives introduced into the sector in recent years. To manage these changes, leaders and teachers have to explore more effective and efficient ways to manage these changes, including understanding the concept of quality, exploring the means, such as a self-appraisal process to manage change, examining the issues of leader and leadership in managing these changes and studying if reflective practices and collaborative learning can help enhance professional growth. These themes are related to the study and are discussed in depth in the following chapters.

CHAPTER II
LITERATURE PROVIDING THE THEORETICAL BASIS OF THE STUDY

2.1 INTRODUCTION

This chapter examines literature that provides a theoretical framework for the study. The literature themes are:

a) Quality issues on early learning;
b) School improvement and self-assessment;
c) Leaders and leadership; and
d) Professional growth, reflective practices and collaborative learning

2.2 QUALITY ISSUES ON EARLY LEARNING

With increasing public funding and public awareness of the importance of early learning, there has been an increase in public demand for effectiveness and productivity in service provision of pre-school education. As a result, an increasing emphasis on evaluation in pre-school has caused pre-school policy makers, administrators and teachers to review the kinds of services being provided and to whom. Through a re-examination of their aims and directions, it is believed these centre-based evaluations may influence the quality of the services being provided for young children.

2.2.1 Regulatory Measures to Quality

Moss, Dahlberg and Pence (2000, p.106) noted that we are in the 'age of quality'. In the 1990's, there was an emphasis in UK on the importance of quality and standards in early years services (Brophy & Statham, 1994). To ascertain early childhood service standards, measures have been derived through systems of management and regulation. In many countries, policy makers affect quality of pre-schools primarily in two ways: first, where the regulatory authorities set up regulations and guidelines to define quality and expect service providers to comply. Failure to meet these minimum acceptable standards would usually result in the service's license to operate being revoked. Second, the authorities (usually governments) provide funding for quality improvement related programmes and activities such as innovation grants and financial assistance. When this happens, fund recipients are expected to deliver outcomes which are of higher quality than the basic standard requirements for licensing. If outcomes are not met, funding would likely be withdrawn.

Regulatory measures, such as licensing and registration, are mandatory inspection processes that enforce operators to meet minimum expectations for programme and facility operations. For example, in Australia, the regulatory authorities specify minimum standards for space, facilities, safety requirements, numbers of children, child–staff ratios and staff qualifications. They also deal with occupational health and safety, child welfare and related regulations, and administer applicable law (Elliot, 2006). Similarly, in Singapore, operators and potential operators have to meet the required standards of safety and health set by the relevant authorities, minimum teacher and principal qualifications and the programme requirements (Pre-school Unit, 2004).

However, concerns have been raised in Australia for example, that a regulatory environment has the potential to stagnate quality practices. As a

result, Australia currently adopts a two-tiered accountability structure: licensing and accreditation. It was considered that various States' regulations for achieving base-level structural licensing requirement of a centre alone could not indicate anything more than a service meeting a basic minimum standard of quality (NCAC, 2006).

In Australia, accreditation is a voluntary evaluation process that focuses on achievable standards and recommendations for improvement of programmes and services. Standards for accreditation exceed the minimum requirements for licensing. For quality assurance, Australia is currently the only nation that makes accreditation mandatory for government subsidies for long day care services (NCAC, 2006). This accreditation system builds on licensing standards to examine other aspects of quality, such as classroom practices, outcomes for children, teacher and child interaction, management and programme evaluation (NCAC, 2006). The general public is given information on the quality profile of the full day care centres by the National Childcare Accreditation Council (NCAC, 2008). Parents and the general public become better informed of the quality profile of the long day care services as a result of this process.

Increasingly, more and more countries are introducing accreditation systems for a range of early childhood services. Besides Australia, in USA, examples are the accreditation by the National Association for Education of Young Children (NAEYC, 2005), the Pre-school Program Quality Assessment administered by the High/Scope Education Research Foundation (High/Scope, 2003) and the quality assurance system using the Early Childhood Education Rating Scale (Harms, Clifford & Cryer, 2005) that is conducted by the Frank Porter Graham Child Development Institute at the University of North Carolina Chapel Hill. In England, one of the many credible accreditation systems is the Self-evaluation and Development Framework for the Effective Early Learning Progammes implemented by the Centre for Research in Early Childhood at the University of Worcester (Bertram &

Pascal, 2005). These accreditation standards represent a high level of quality. Therefore, centres that wish to be recognised will approach accreditation institutions voluntarily to have their programmes and services accredited, as the status of accreditation is a benchmark for education quality and excellence.

Whether it is a regulatory measure or a management effort, evaluation and assessment of a pre-school for their quality service standard is often dependent on a set of predetermined norms, indicators, checklists and criteria. This procedure implies that the main aim of quality assessment focuses on knowing what has been achieved and the level at which it has been achieved. In other words, the two questions worth discussion are: What constitutes quality early learning and how do we know that these observable elements are critical and appropriate indicators of quality?

2.2.2 Concept of Quality in Pre-School Education

There has been a debate on what constitutes quality in the research and literature by Dahlberg and Pence (2004, 1994), Farquhar (1990), Katz (1993), Laevers (2005a, 2005b, 1994), Moss and Pence (2000, 1994), Moss (2004, 1994), Munton, Mooney and Rowland (1997), Pascal and Bertram (1994), Raban, Ure and Waniganayake (2003), Rosenthal (2003) and many others.

There is a growing awareness that quality is a relative concept that needs to take into account ‘context, complexity, plurality and subjectivity’ (Moss, Dahlberg & Pence, 2000, p.104). Pence and Moss (1994) recognised that quality encompasses a set of values, beliefs and agendas of various stakeholders. They asserted that quality is a social construct and a standardized way to measure quality is inappropriate (Moss, Dahlberg & Pence, 2000). Parents, curriculum developers, early childhood educators and

academia tend to refer to quality in relation to instructional strategies, learning activities, teachers' interactions with children, teaching methods and learning environment. Policy-makers, regulators, funding agents and quality assurance authorities, on the other hand, are inclined to use predetermined norms on physical facilities, such as the group size, adult-child ratio, teacher qualifications and training hours as indicators of quality standards (Dahlberg, Moss & Pence, 2000; Fenech, 2006; Phillips, Mekos, Scarr, McCartney & Abbott-Shim, 2000).

Moss, Dahlberg and Pence (2000) questioned whether it is possible or not to assess quality. They opined that quality is "subjective and qualitative" and "socially and culturally linked" (2000, p.104). Pascal and Bertram (1994) and Karmel (1985) echoed that quality is "value-laden". Rosenthal (2003), too, expressed that quality in early childhood centres in a given society "reflects the valued educational goals and valued educational practice of the cultural communities constituting the society" (2003, p.104).

Brophy (1994) and her team in USA involved in the Playgroup Research Project in 1994 used the Early Childhood Environmental Rating Scale (ECERS) to structure observations. They concluded that "quality is contextualised and any assessment on quality of a setting is a "value-based exercise" that is affected by "a set of values, beliefs and agendas of various stakeholders" (1994, p.72). Popkewitz (1990) noted that what is important in a process and what is viewed as pedagogical practice of high quality will always be influenced by the evaluation strategies and tools. He shared his concern that evaluation of quality, if taken as a value-free activity, would become a strictly technical procedure.

Moss and Pence (1994) suggested the discussion about quality is evolving and is centred on two aspects of the definition: analytic and evaluation. The definition of quality using "analytical" meaning refers to elements that are more qualitative and could be used as a proxy for quality, such as, the quality

of teacher-child interaction and staff training. Quality interpreted from the "evaluation" standpoint refers to elements such as "customer satisfaction", that is a more service-oriented goal and is measurable. Service performance is always measured by how well the service meets its business objectives. Moss (1994) also viewed both aspects, analytical and evaluations, as being complementary.

Moss, Dahlberg and Pence (2000) noted that practitioners and researchers tend to focus more on "a search for definitive and universal criteria that offer certainty and order" (2000, p.108). This is based on a belief that there is a "universal, knowable and objective standard that can be found, defined, measured and assured by experts" (2000, p.107). Self-appraisals by practitioners, site inspection and external validation by regulators and evaluation by accreditation bodies have since emerged and the quality debate has now focused to be less of a philosophical argument, and more of a management dispute.

In this research study, the use of the Child Involvement Scale, the Adult Engagement Scale and the Early Childhood Environmental Rating Scale are examples of what early childhood professionals and researchers (Harms, Clifford & Cryer, 2005, 1988; Laevers, 1994; Pascal & Bertram, 1997) have identified and validated as having "objective standards" and have deemed to be a good proxy for assessing quality. Using these instruments, this study gathered evidence to answer the primary research question, i.e. In what ways, if any, would the adoption of a self-evaluation and development framework improve the level of child involvement and the level of adult engagement with children?

Moss and Pence (1994) used an analogy utilising two rulers to alert users of such an instrument. He compared the instrument for quality assessment to a small ruler and the assessors to a big ruler. He highlighted the critical aspect

which is the assessors whose values, beliefs and interests affected their interpretation and assessment of the quality standards.

In brief, 'quality' is a value-based, dynamic and constantly evolving concept. Quality should be perceived as a continuous process rather than as the end products of standards. In this study, 'quality' is considered from three perspectives. First is from the perspective of learning. The level of child involvement is believed to be an appropriate indicator of quality learning. This notion is elaborated in Chapter III when a discussion is made on how Laevers (1994) viewed children's action and behaviour as a "more precise point of reference for the assessment of quality" (p.160). Second is from the perspective of teaching. The level of adult engagement focuses on three attributes of quality interaction, i.e. sensitivity, stimulation and autonomy that are believed to be the critical indicators for assessing teaching quality. Third is from the perspective of setting. Appropriate early learning conditions and environment that will allow quality learning to take place are perceived as a key variable and indicator for optimal learning. Chapter III focuses on an elaboration of these above-mentioned three variables that are believed to be the critical factors for quality improvement.

2.3 SCHOOL IMPROVEMENT AND SELF-APPRAISALS

School improvement in recent years has differed from those of the previous decades in terms of process, content, strategies and outcomes. Previously school improvement was considered the province of a school inspectorial process where inspectors, as external evaluators, working within the policies of government set standards, would visit, inspect, advise and rate schools. The amount of knowledge gathered on school improvement is considerable (Arbaugh, 2003; MacBeath & McGlynn, 2002; Murphy, 2005). With the changing role of the family, evolving values and emerging knowledge in relation to the societal emphasis on education, parents now are

showing a greater interest in the school affairs of their child. In Singapore, parents strive to enrol their child in the best school of their choice and, consequently, there is increasing pressure from parents seeking improvement in school effectiveness for their children. In response, the Singapore Education Ministry has advocated that schools should actively involve their stakeholders (MOE, 2007b) in their decision-making process.

Making changes and creating a high quality pre-school does not come from a defined formula (Pascal & Bertram, 1997). External support from relevant authorities and professional bodies can act as catalysts to this process of change by providing incentives and necessary infrastructural support (Day, 1993a, 1993b; DuFour & Eaker, 1998; Phillips, Mekos, Scarr, McCartney & Abbott-Shim, 2000; Raban, Nolan, Waniganayake, Ure, Deans & Brown, 2005). However, successful centres make changes in ways that are specific to their unique circumstances and needs. Strategies for school improvement now tend to reflect a more process-oriented approach, where more attention is paid to the process of building up the school's capacity to manage change and to seek improvement. The implementation and institutionalization of change within the school hence becomes more important (Lambert *et al*., 1995; McBeath & McGlynn, 2002; Murphy, 2005).

2.3.1 Self-Appraisals as a Means for School Improvement

Self appraisal is a means for self-reflecting and self-evaluating how well the outcomes have met the stated goals. In an organization setting, it involves a "deliberate and systematic approach" to improving the outcomes of action in an organisation. It involves a mechanism for identifying issues and planning regular opportunities for discussion and reflection (Brown, 1988, p.1).

At an individual level, self appraisal is a process of reflection, of looking within oneself. Dewey (1933) described reflective thinking as ”the kind of thinking that consists in turning a subject over in the mind and giving it serious and consecutive consideration” (1933, p.1). He noted that reflective thinking ”enables us to direct our activities with foresight and to plan according to ends-in-view, or purposes of which we are aware. It enables us to act in a deliberate and intentional fashion to attain future objects or to come to command what is now distant and lacking” (1933, p.17). Dewey’s definition of reflection has been adopted in this study as his definition is future-oriented and has a sense of being forward looking. This view was echoed by Schon (1983, 1987) who described the process of reflection as enabling an individual or an organization to recall what was done, to be critical of the actions and processes, to understand the underpinning philosophies and beliefs and to search for options and alternatives.

Applying this process to a pre-school setting, self-appraisal can be seen as part of the process of questioning the centre’s daily practices and subsequently implementing needed changes as means of self-improvement. For example, teachers could practice reflection by using a given tool as an aid, such as the Child Involvement Scale, to find out if their pedagogical practices have met the interests and needs of children. This practice would encourage teachers to engage in cycles of thought leading to actions based on their professional experiences. Reflection involves reviewing, reconstructing and critically analyzing situations (Schon, 1987, 1983; Schratz, 1997).

However, practising self-appraisal does not guarantee that pre-schools will reach high quality standard (Li, 2004; Munton, Mooney & Rowland, 1997). Achieving high quality standards requires practitioners to have a goal for quality improvement. It also requires high quality leadership to carry out and monitor the improvement plans using effective strategies (Fullan, 2001; Lambert, 1995; Rodd, 2006).

Based on these beliefs, it follows hypothetically that self-assessment provides an appropriate platform for practitioners to be engaged in a reflective thinking process. According to Senge (1994) and Fullan (1992), in this process teachers and principals could have a dialogue, could be more open-minded and hence could work collaboratively towards change and improvement. They can share their experiences and strategies and learn from each other. Eventually they will understand and realize why they do what they do and how they can improve their daily practices. Over time, their level of professionalism will be raised through this reflective process of improvement.

2.3.2 Considerations in Selecting a Self-Appraisal Framework

Self-assessment is a part of the process by which each centre questions their daily practices and implements appropriate changes as a means to self-improvement. A self-assessment framework for quality improvement is concerned with matters relevant to the levels of quality in all aspects of a child's learning environment. Hence, Harms (1992) noted that measures of quality can be useful tools for research, but they can also be valuable to individual services as a system for monitoring, evaluating and improving services. If a self-assessment framework and its instruments are to help achieve its service support function, they must have credibility and acceptance so that the centres will use the framework and its tools for quality improvement (Harms, 1992).

As mentioned in Section 2.2.1, there are a number of frameworks and instruments with elements of self-assessment for improvement. On selecting or developing a framework of self-appraisal, Harms (1992, pp.169-186) advised that the following criteria should be considered by practitioners:

a) An effective self-appraisal and development framework should give practitioners a clear direction and strategy for raising quality in key

domains, contextual conditions, process variables and/or learning outcomes.

b) A useful framework should have reliable instruments and clear procedures for users to make improvement. In other words, an effective framework should identify critical elements of high quality that experts and professionals consider relevant to the concept of high quality early childhood provision.

c) A reliable framework should have its elements well tested and validated in different settings to ensure their reliability and validity.

d) An easily understood framework allows practitioners to recognise important elements of 'quality' in their daily experiences in the classrooms. These elements may be classroom design, child-related displays, room arrangement; desirable learning situations, such as high child involvement level and desired learning outcomes, such as a child's emotional well-being.

2.3.2.1 Possible self-appraisal frameworks for adoption

a) Early Effective Learning (EEL) framework

From an examination of relevant literature, the conceptual framework developed for the EEL project (Pascal & Bertram, 2004) was first considered as a potential framework for improving pre-school education in Singapore. The EEL project had developed and validated a self-assessment and development process and proved to be a cost-effective strategy to help raise the quality standard in various early learning settings (Pascal, 2001; Pascal & Bertram, 2000, 1999a, 1997a). The project had two strong elements, research and development. In its four-stage process, the practitioners went

through the self-evaluation, action planning, improvement and reflection stages, using tools (i.e. the child involvement scale and adult engagement scale) to ascertain the levels of child involvement and conduct a comparative study to assess if their action plans led to actual improvements. Practitioners involved in utilising the EEL framework eventually acquired professional attitudes and became better equipped with knowledge and skills to effect changes for improvement (Pascal & Bertram, 1997; Ramsden, 1997).

At an Early Childhood Conference in 1999, Pascal outlined the EEL conceptual framework, which consists of three sets of variables for evaluating quality in early childhood settings: context, process and outcome variables. The *context variable* contains ten dimensions representing the environmental features of a setting. The *process variable* describes and quantifies various interactions taking place in the process of child learning, including the level of child involvement in a task and the quality of adult interaction with children. The outcome variable presents and quantifies different aspects of the development of children, teaching adults and the service centre. With the piloting experience and considering the local context and cultural differences, for this study, I adopted the key features of the EEL model, namely: the four-stage cycle of evaluation, the case study approach and the measuring tools, such as Child Involvement Scale and Adult Engagement Scale.

b) Early Childhood Environmental Rating System (ECERS-R)

Another potentially effective and relevant evaluation framework and instrument for quality improvement of a centre that was considered for the pre-school sector in Singapore is the Early Childhood Environmental Rating Scale (ECERS). It is an instrument with an evaluation framework that was developed by Harms, Clifford and Cryer (2005, 1998) in the USA. This tool includes assessing the physical environment, the daily interaction experiences with people and the personal and professional needs of teachers

who directly impact on the child's development. The detail of the ECERS Scheme is elaborated in Chapter III.

The ECERS provides pre-school teachers with a common vocabulary to describe and assess 'quality' and serves as a starting point for quality improvement. For example, ECERS tool spells out one quality element of fine motor development for children in terms of the amount, type, accessibility and regular rotation of developmentally appropriate fine motor materials (Harms, Clifford & Cryer, 1998, p.27). Using this tool, practitioners would be more aware of and better understand what quality elements are and how the quality features are evident in a centre. They can recognise these quality elements and focus their improvement efforts strategically on the elements that would help them achieve their targets.

Most participating teachers and principals in Singapore are familiar with the ECERS as some principals and teachers previously attended the ECERS awareness workshops conducted by Professor Thelma Harms, one of the tool developers. Most participants learnt about the ECERS tool at their pre-service teacher training courses. At the piloting experience for this study, the ECERS was considered to be a more suitable tool for the selected pre-schools to obtain a baseline assessment of their quality status.

2.4 LEADERS AND LEADERSHIP

Morgan (in Rodd, 2006, p.14) defined leadership from two perspectives: one is positional that "ties to the position" of a leader in an organization, the other is about "a capacity, ability or a set of strategies to lead". Rodd stated that leaders in the childhood field are predominantly female (2006, p.31). She also observed the reluctance of early childhood practitioners to see themselves as leaders (2006, p.9). As described in Section 1.2.2.3, new initiatives from the Singapore Education Ministry and

increasing demands from parents have prompted kindergarten principals to perform effectively both as instructional leaders and organisational leaders. The new curriculum framework has also demanded principals and teachers to design curriculum and instructional activities in an integrated manner that enables the holistic development of a child. Equally important is that principals have to ensure that curriculum planning creates a smooth transition for children to move from the nursery to the kindergarten and from the pre-school to primary schooling.

In Singapore, the multiple pre-school related initiatives outlined in Section 1,2,2,3 have a great impact on the management strategies. In response to the new initiatives, the roles of pre-school leaders, be they principals, supervisors, managers or directors need to be more than curriculum developers and instructional leaders, they have to be capable of mentoring and coaching teachers, guiding staff to achieve administrative excellence and efficiency in daily operation as well as setting up new systems and processes to raise the quality of service in their centres.

2.4.1 Challenges Faced by Pre-School Leaders

Implementing new initiatives has never been a pleasant experience for many principals. Fullan (1991, pp. 63-69) shared his insight into the implementation of new initiatives. He said that only when “both the administrators perceive the innovation and teachers see it as a need would it then be taken as relevant to the community and be accepted by the members”.

Fromberg (2003) and Rodd (2006) recognised the tension that is created in the process of transforming early childhood services from a cottage industry to a profession. For instance, much like elsewhere in the world many kindergartens and childcare centres in Singapore are being run like cottage

industries. Most centres employ female teachers and support staff, as care and education of young children have been traditionally perceived as best performed by women (Osgood, 2006; Rodd, 2006). These small centres offer programmes to a small number of children living in a neighbourhood and charge relatively low fees. They are facing great pressures as a result of the government and licensing authorities' effort in raising the quality of pre-school education.

Similarly as in other countries (Hargreaves, 2006; Osgood, 2006; Rodd, 2006), pre-school teachers in Singapore are not well paid and not regarded as 'professionals' as compared to their counterparts teaching in formal schools. This situation is because the entry requirement for pre-school teaching is much lower than for their counterparts in primary schools. In Singapore, a candidate with 3 'O' level credits including English Language can be registered as a pre-school teacher whereas a primary school teacher has to be a graduate. Hence, pre-school educators generally have lower educational levels and fewer professional qualifications. Due to funding constraints, continuous in-service education is not a priority in the budget of a pre-school. Therefore, pre-school teachers project a poorer professional image as compared to teachers in formal schools and hence are offered lower commensurate financial compensation. Criticism of this system was published by a local Singaporean paper 'Today Voices' (2007). Some examples of the criticism were: "pre-school teachers deserved better pay", "sad to learn how low the salaries of these teachers are" and "some holding diplomas and degrees are not enjoying the remuneration that their counterparts in primary schools are getting".

How pre-school principals, supervisors and directors can be effective leaders in this age of evolving change, is an important question for consideration. Fullan (1991, p.63) noted that new initiatives would work only when the leaders perceived the innovations as being relevant to the community and when teachers perceived them as being necessary. He quoted many

examples from the business and education sectors to illustrate that “in the knowledge-based society, they both must become learning organisations or they will fail to survive” (Fullan, 2001, p.xi). He further emphasized that “we are living in chaotic conditions. Thus, leaders must be able to operate under complex, uncertain circumstances”. These changes in pre-school education have daunted even the experienced pre-school leaders. Not surprisingly, the initial reaction of the pre-school sector to the changes being forced upon it by changing community expectations as well as by government initiatives has been a mixture of anticipation and anxiety. Handy (2001, p.5) echoed these sentiments when he said that “the very different world I foresaw was fraught with insecurity for most, with uncertainty and fear”.

In the era of increasing uncertainty, Wheatley (2002) of the Berkana Institute in USA advised leaders to re-focus on the bigger picture. She highlighted the physiological stress that could impact on making the human brain unable to see patterns. To cope with the increased fear, she urged leaders to work on improving the quality of working relationships, to ensure people engaged in meaningful work together, so as to enhance the capacities of their workers.

In addition, leaders in managing the process of change in a pre-school should not overlook Maslow’s theories of five basic needs of people (in Rodd, 2006, p.88), i.e. physiological needs for sustaining life; the need for safety, order and freedom from fear; the need for love and feeling of belonging; the need for self respect and self esteem, and the highest level of need of self-actualisation, the need to maximise one’s potential. Failure to meet these needs will lead teachers to resist change. Fullan (2001) accurately describes the dilemma of leaders when he said that ”on the one side, fear, [there is] anxiety, loss, danger, panic; on the other, [there is] exhilaration, risk-taking, excitement, improvements, energising. For better or for worse, change arouses emotions, and when emotions intensify, leadership is the key” (p.1).

2.4.2 Misconceptions about Leadership in Pre-Schools

Ebbeck and Waniganayake (2003), Hard (2005), Nupponen (2006), Rodd (2006, 1998, 1997) and Soo (2004) discussed leadership issues in the early childhood field. Hard's research findings highlighted issues that could have hindered leadership, such as the leaders' understanding of leadership, the training and qualifications of the leaders and the access to knowledge about leadership. Ebbeck and Waniganayake (2003) noted the challenges for planning and for implementing change facing today's leaders in the early childhood field. In Singapore, general feedback from the leaders in the kindergartens shows that there are some common misconceptions about leadership in pre-schools. Understanding these misconceptions would help us understand how principals could deal with change more effectively.

a) Leadership equals management.

In many pre-schools, administrators and managers are the ones responsible for the smooth running of the centre. They spend most of their working hours on day-to-day operations, such as fee collection, inventory checking, managing parents and public enquiries and relief teaching. Geoghegan *et al*. (2001), Nupponen (2006), Rodd (2006, 1997) and Soo (2004) found that early childhood directors and teachers in charge of pre-schools perceived and spent most time in activities such as administration, managing and supervising staff, personal interaction with parents and other professional agencies, managing the budget, crisis management and attending to visitors and calls. This work pattern indicates that professional functions, such as monitoring the programmes, assessing the effectiveness of the programmes and curriculum design, development and improvement were given little, if any, attention in their list of functions.

b) Principal is an employed staff member.

In Rodd's study (1997, p.46), she speculated that "leadership as a concept appears to be related more to individual centre activity rather than to leadership in the broad early childhood field". She urged that pre-school professionals in the leadership position "should understand how the ways in which they fulfill that role impacts upon quality". In Singapore, many principals and supervisors of the centres are employed staff who tend to follow instructions given by their employers rather than take on the role of a professional. As professional leaders, principals and supervisors should have a clear direction, set realistic goals and gain the support from their senior managers and teachers, instead of passively waiting for instructions from higher authorities.

c) Leadership is the business of the principal, not teachers.

Today, pre-school teachers do not seem to accept their leadership role in their own area of responsibility. Troen and Boles (cited in Murphy, 2005, p.121) expressed that "teachers are reluctant to think of themselves as leaders". Katzenmeyer (cited in Murphy, 2005, p.121) too, observed that "teachers are socialised to be followers, not leaders". Ebbeck and Waniganayake (2003) advocated that in a centre, the particular functions of administration, management and leadership are not confined only to one or two individuals. These tasks are often "a shared responsibility, requiring cooperation at different levels throughout the centre" (2003, p.13). In the context of pre-schools in Singapore, most teachers tend to follow instructions given by their principals, rather than act as instructional leaders when planning and implementing programmes and activities for the children under their charge. The training project by the High/Scope team (Epstein, 1993) noted that even teachers with low formal education qualifications can be trained to acquire developmentally appropriate teaching practices and improve their leadership abilities if they are given opportunities, such as a

good training programme, systematic ongoing training, good role models and support for professional development.

d) Leadership is appropriate for a big enterprise, not for a small centre.

Principals in a small centre may have to take on extra duties at times, such as cleaning up a messy corner or giving a child a shower when support staff is not available. They may have to relief-teach a class when a teacher is on leave. Leadership is necessary in any setting regardless of its size. The distinguishing characteristic of quality leadership is reflected in the strategies that the leaders employ. An effective leader will take into consideration the situation of his/her organisation and adopt an appropriate strategy that will likely help the organisation to achieve its goals and yield positive outcomes. This is more so in a small centre, as the ”extent of collaboration may be more intense and necessary as the centre relies on all staff working together” (Ebbeck & Waniganayake, 2003, p.13).

2.4.3 Managing Change: Establishing a Learning Culture

Rodd (2006, p.182) advocated change as a necessity for the growth of an organisaiton as she perceived “growth” as a result of change and growth shows “the capacity of an individual or organization to respond to the environment” (2006, p.182). The question to ask is how to manage resistance to change. Nupponen (2006) and Rodd (2006) suggested different strategies to manage the staff’s resistance and emphasized the need for early childhood leaders to build up different capabilities and skills to manage change.

Fullan (2001, p.28) and Senge (1990) both advocated that in our knowledge-based society, businesses and education institutions must become learning organisations or they will not survive. Senge envisioned a learning

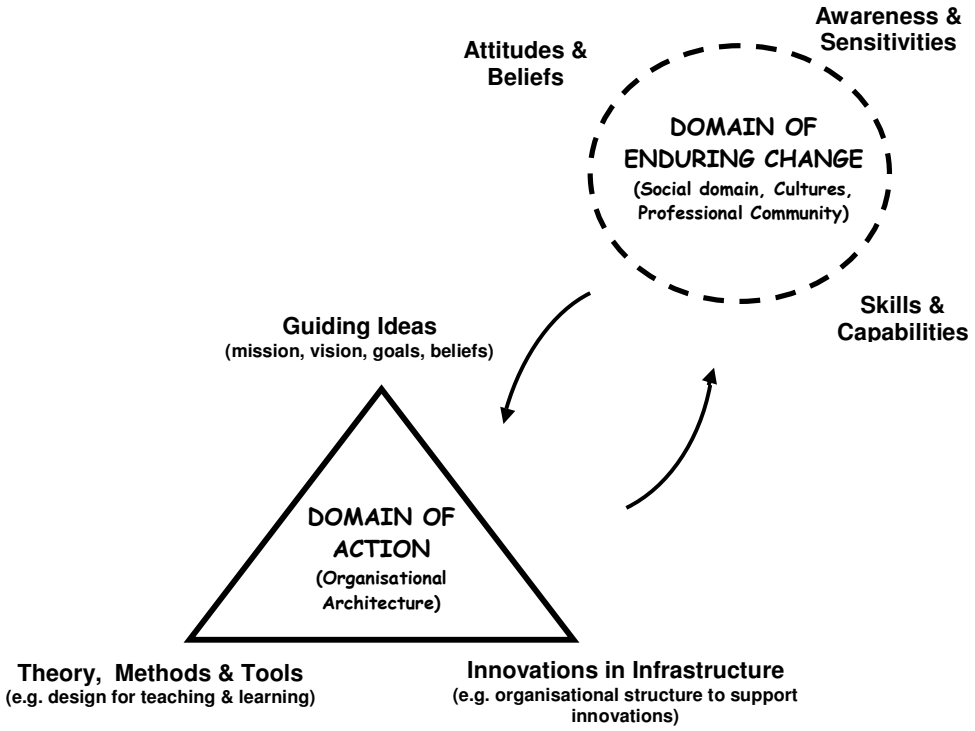
organisation “where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together” (1990, p.3).

Fuller (cited in Senge, 1994, p.28) said that ”if you want to teach people a new way of thinking, give them a tool, the use of which will lead to new ways of thinking”. For example, if a centre wants to develop teachers to take on leadership roles, the centre has to provide teachers with ample opportunities to be facilitators, presenters and mentors. The centre has to ensure that teachers take turns to play the roles of facilitator, presenter and/or mentor at meetings, at sharing sessions, in action research projects and/or community projects. The facilitators, presenters or mentors should not be seen as people with positional power, but as people who can direct the processes to discuss the main concerns and issues of an organisation, or who can help facilitate the discussion to resolve differences and to reach a consensus for an action. Eventually, the members are empowered and the organisation is enhanced. Because they share common goals and values and have the skills and knowledge to work together to solve problems, they contribute to raising the service standard of their organisation. These are the many strategies that a centre could consider employing, so that the organisation would eventually build up a learning culture where every member is empowered to be a leader in his/her own areas of responsibility.

Senge urged leaders in an organisation to create ample learning opportunities for people in the organisation to become high performing individuals who would continue learning and producing positive results. The thinking framework (Figure 2.1) by Senge (1990, 1994) illustrates the critical elements that would contribute to enhancement of the capabilities and skills of leaders. It would help leaders understand and perceive how to effect change in an organisation.

Senge suggested that leaders begin with the domain of action which a concrete structure and actions were perceived as the "most tangible form of efforts" (1994, p.42). These concrete actions are as follows:

a) having clear goals and vision;
b) having sound theories, appropriate methods, tools and procedures;
c) providing flexible infrastructural support.



Source: Senge (1994, p42)

Figure 2.1: Senge's Thinking Framework on Effecting Change in an Organisation

The most difficult part in effecting change is the change of attitude and value system of the staff. Senge (1994, p.42) believes that if an organisation

creates ample opportunities for members to learn together, over a period of time, members in the organisation will acquire new skills and capabilities that will enable them to change their understanding of the ways they do things and resolve conflicts.

2.4.4 Challenges in Managing Change and Innovations

Bolam (1975) considered an innovation to be any change which presents something new to the people. Rodd (2006, p.184) recognised it as a "force that gives the organisation its adaptability, flexibility and responsiveness". Bolam (1975, p.279) believed that an innovation is only considered useful if the driving force is for progress. To start implementing a self-assessment and development framework, a national curriculum framework or accreditation of teacher training programmes that are new to the childcare and kindergarten sectors can be considered an innovation. However, Fullan (2001, 1991) proposed that any hasty and ill-considered innovation would disturb the educational processes. These viewpoints imply that an innovation can do more harm than good to a system if it is not properly managed. If changes and innovations greatly challenge the fundamental professional values, beliefs and practices, they are more difficult to implement.

In Singapore, multiple innovations are even harder to be managed by pre-school principals. Whitaker (1993, p.63) noted two forms of resistance by members of the organisation, i.e. systemic and behavioural. Systemic resistance occurs when there is an inadequate knowledge, information, skills and managerial capacity. Behavioural resistance is centred on the emotions and derives from the reactions, perceptions and assumptions of members in the organization. Fullan (2001), on the other hand, noted challenges from the leaders' perspective. He used the hare and the tortoise fable to elaborate that in a culture of change, effective leaders are more tortoise-like than hare-like

because they involve slow learning in context over time. It is within this specific context that all members are familiar with, that individuals learn and grow together (pp.122-125). Fullan (1992) also noted that the key issue from an implementation perspective is that "how the process of change unfolds vis-à-vis what people do (behaviour) and think (beliefs) in relation to a particular innovation" (p.22).

2.4.5 Phases of 'Change and Innovations'

Changes and innovations generally go through three phases: initiation, implementation and incorporation.

a) Initiation phase

This covers the period of time during which a particular innovation is introduced into an organisation. However, evidence has shown that many innovations are linked to available funds, resource and expertise support. Once the funding ceases, the innovation ends (Weindling & Earley, 1987, p.93), too often because there is a lack of interest and commitment from both administrators and teachers. Fullan (1982, p.107) said that "educational change depends on what teachers do and think. It is as simple as that". Most strategies that are designed to facilitate change concentrate on lowering resistance to it. If the change agent sees the needs that give rise to resistance to change among teachers, half the battle is won. Stoner and Freeman (1989) listed Maslow's hierarchy of needs and noted that failing to meet these needs may lead teachers to resist change. Bolam and Pratt (1976, pp.14-25) found that some strategies contained many elements of "control" and some, many elements of "influence". A mix of the "control" and "influence" elements, together with incentives, may be a good strategy at this stage.

For an individual teacher, change involves moving from the familiar to the unfamiliar, from the known to the unknown. At the initiation stage of an innovation, there are strong emotional feelings of confusion and disbelief, a sense that the familiar structures and boundaries of the comfort zone are being disturbed. Withdrawal may follow when individual teacher's awareness of the implications of the changes begins to emerge. The role of the leader is to assist these teachers in overcoming this process of disorientation and confusion. Time and the relationship building are crucial as members struggle to come to terms with new demands and requirements.

b) Implementation phase

This is the most important and complex phase in the innovation process. It begins when teachers are asked to implement the innovation for the first time. Gross, Giacquinta and Berstein (1971) found that the five circumstances that could be responsible for the failure of innovations are:

i. the teachers' uncertainty about the innovations;
ii. the teachers' lack of specific skills and knowledge required to perform new roles;
iii. the insufficient instructional materials required for the innovation;
iv. the incompatibility of organisational arrangements with the innovation, such as rigid scheduling of timetables, etc; and
v. the lack of staff motivation because of a lack of required experience .

At this stage, teachers are unable to implement changes mainly because the administration had failed to identify the various types of difficulties teachers were likely to encounter during implementation and to establish and use feedback mechanisms to correct these deficiencies. A close monitoring of the innovative process is highly desirable. Keast (1987) argued that monitoring is the basic function of the manager as it helps the management to see that

costs are kept within bounds, schedules are met and teachers work towards achieving the objectives of the schools' policies. Leadership is crucial at this time.

c) Incorporation phase

This is the final stage when innovation becomes a routine part of the school. In his study of innovation, Fullan (1991) saw the head as one who is in a position to shape the conditions necessary for success. He revealed that only a minority of well-implemented innovations were continued beyond the period of funding. He noted that the importance of the external resource support and expressed concern over the high staff turnover rate. Hence, in-service and pre-service support for existing and new teaching staff is crucial to sustain an innovation. The administrator also needs to provide continuing maintenance for the innovation as well as make routine the procedures and mechanisms required by the innovation. For instance, he or she could incorporate the innovation into the school's policies, budget, working schedule, and instructional and support services. As a whole, the success of an innovation depends very much on the sensitivity of the management towards the needs of both the organisation and the individual teachers involved and their active involvement in the process of problem solving.

Fullan (2001, p.28) highlights the importance of quality leadership in learning institutions as it is the key to this transformation process. Kindergarten principals, despite being required to play more complex and demanding roles, should not lose sight of providing an environment for optimal learning. In this study, one of the secondary research questions was formulated to explore the inter-relational relationships within this context of change: *In what ways, if any, would a self-evaluation and development framework improve leaders' capabilities and skills, and in turn help effect organisational change in the selected pre-schools?*

2.5 PROFESSIONAL GROWTH AND REFLECTIVE PRACTICES

Professional growth and teacher quality are the recurrent themes of school improvement efforts. However, in Singapore, efforts seem to be geared towards raising teacher qualifications and less towards professional development. Farquhar (2000, p.3) advocated that in order to raise the quality of education, there exist two options. The first is for regulatory authorities to adopt a more controlled approach in setting pre-determined outcomes and measurable indicators to measure quality. The second is a self-motivated approach that practitioners continuously improve their own practices from within their settings.

It is with the belief that the second option will yield long term and sustainable outcomes that the following research question was set: *In what ways, if any, would a self-evaluation and development framework enhance teachers' capabilities and skills in the selected pre-schools?'*

Professional development is a holistic concept which embraces both personal development and staff development (Bell, 1999; Day, 1993). Day defined it as a complex and continuous growth process as follows:

> *professional development consists of all those conscious and planned activities which are intended to be of direct and indirect benefit to the individual, group or school; and which contribute, through these, to the quality of education in the classroom. It is a process through which, teachers can review, renew and extend their commitment as change agents to the moral purposes of teaching, and by which they acquire and develop critically the knowledge and skills essential to good professional thinking, planning and practice with children, young people and colleagues through each phase of their teaching lives (Day, 1993, p.2).*

How we perceive the roles of a teacher will influence our perception on professional development. If we view teachers as a means to impart

knowledge, we will focus professional development of teachers primarily on the methods and techniques of teaching. If we see teachers as part of a school system, we may broaden our understanding of professional development of teachers from matters related to classroom management and knowledge domains. If we consider teachers as part of an education system, we may stress the importance of putting policies into practices in the planning of professional development for teachers (Bernier & McClelland, 1989). For example, Pascal (1996) sees development as ongoing learning of professional knowledge to reach a deeper understanding of a specific domain. This ongoing learning will update practitioners on trends and developments in the field. Murphy (2005) presents an abundance of evidence in the school reform literature to show that ample support for professional development of teachers help them see the "link between policy and practice" (p.143).

2.5.1 Need to Reflect on One's Beliefs and Value Systems

Professional development should include the self-reflection of an individual's own beliefs and values system, reflection of day-to-day practices and scrutinizing the underlying beliefs of these practices. Eisner (1992) examined the thinking and practices through the history of education and concluded that belief systems and values relevant to educational practices and curriculum decision have emerged within the culture. Teachers, parents and policy makers bring with them different ideologies, i.e. belief systems about child learning. These beliefs influence their thinking, choices and actions in helping children develop and grow. These choices and actions will have long term effects on a child's development cognitively, physically, socially and emotionally (Eisner, 1992, p.304).

Curtis and Carter (2008) notice that educators each have their own beliefs, assumptions and propositions on child learning and these have great

implications on the ways teachers scaffold their teaching structure for child learning. These beliefs will also affect their choices on the mode of assessment adopted for effective learning. For example, if teachers believe that children are active learners with different abilities and learning styles, they would likely apply a range of teaching approaches to develop different talents and meet the needs of children. If teachers believe in holistic development of a child, teachers may adopt a portfolio system to evaluate the progress of each child instead of using pencil and paper tests. If teachers believe that children bring prior knowledge and perceptions to new experiences, they need to discover and act on the prior knowledge first. If teachers believe that children are social learners who acquire knowledge together with people around them, they could then use different cooperative learning strategies to enhance child learning.

I maintain that to ensure quality learning, early years educators have to re-examine their fundamental beliefs about child learning and reflect on their teaching approaches through an on-going process of reflection and self-evaluation. With collaborative and collective efforts, teachers in a pre-school can establish a culture of learning, in which they will acquire a better understanding of theories of child development and appropriate practices to help raise the quality of learning for children.

2.5.2 Need for Professional Growth

Professional preparation does not end with college or a certificate. Scarfe (cited in Ebbeck, 2005) stated in 1961 that the value of education is to break ‘new ground’, not to stay on a ‘safe ground’. If teachers are not excited and not testing new ideas, but carrying out the same routine, young children will feel bored and eventually loose interest in learning.

In addition, there is a constant need for continuous re-education. Each year, research, materials, and experiences will be added to the teachers' knowledge about children and about how to develop their optimum growth. Teachers should be involved in in-service programmes, conferences, professional reading and forming learning networks. Murphy (2005) advocated the link between policy and practice in professional development. With the initiatives announced by the Singapore Education Ministry in 2000, such as raising the minimum academic and professional standards for teachers, many pre-service and in-service courses and conferences become requirements that are imposed by authorities, the funding agencies and/or the organizations. Training needs are unfortunately, not self-motivated, but imposed by these others. This is well evident with the latest changes announced in March 2008 by the Ministry that from January 2009, all new pre-school teachers must meet the minimum academic requirements of 5'O' level credits, including at least a B4 grade in English Language, and a minimum professional qualification of a Diploma in Pre-school Teaching (DPE-T). By January 2013, all existing teachers are required to upgrade professionally to at least a Diploma in Pre-school Teaching (DPE-T) (MOE, 2008b).

Teachers' professional needs are becoming more demanding and multi-faceted (Fromberg, 2003). There are a number of areas in which professional demands are increasing for pre-school teachers in Singapore. For example, they are expected to be able to defend the value of early childhood education and their rationale for adopting a play-based approach, including explaining and defending their choice of curricula and related decision-making when they face parents' queries. The traditional responsibility of a classroom manager and a child-minder is no longer adequate. They have to be a curriculum planner, a facilitator, an evaluator and a leader of their areas of responsibility (Ebbeck & Waniganayake, 2003; Fromberg, 2003; Rodd, 2006, 1998).

Rosenholtz and Kyle (1984) noted that even the greatest teachers cannot continue to develop and grow professionally without new ideas and opportunities for debate, experimentation and collaboration. There is evidence that collaborative interaction and relationships are features of successful schools. In the literature written by Goodlad (1990), Holly (1983) and Little (1987, 1984, 1982), there are also data to suggest that collaboration and collegiality contribute more to professional development than do the traditionally formal methods of lecture presentations. What may need to be addressed in this collaboration and socialisation process are the potential issues of power structure (Lomangino, Nicholson & Sulzby, 1999; Overton, 2009, Rodd, 2006) and relationship building (Dillenbourg, 1999; Gillies, 1997; Johnson & Johnson, 1994; Overton, 2009; Rodd, 2006).

Lyons and Pinnell (cited in Murphy, 2005, p.149) emphasized that an effective teacher development programme should help teachers to be critical thinkers and active researchers, making inquiries into their own practices. Souto-Manning and Dice (2007) and Willian (2009) too notice that this reflective and inquiring element is a critical variable that brings about professional growth of teachers. Johnston (1999) elaborated that this "openness of discussion maximizes the possibility of distributed cognition, the system of collective thought in which the whole is more than the sum of the parts" (1999, p.40). In this process of open dialogue and self-reflection within an organization, two significant outcomes were noticed by Murphy (2005, p.149), namely shared ownership and collective responsibility. Murphy cited some tangible ways that schools could practice to enable their teachers to be enriched and developed professionally. For example, some schools set up regular meetings that allow teachers of different levels and with different specialized knowledge and skills to come together to share ideas and thoughts. Some schools create forums for teachers and administrators to form a task force to resolve organizational issues. Arranging for teachers to observe other peers in the classrooms and mentoring strategies are some other practices which are found to be effective.

The policy developments in Singapore since 2000 mentioned in Section 1.2.2, Chapter I, have required the pre-schools to step-up their education role in assisting the young to be competent and confident individuals who would survive in the modern world. Hence, kindergarten principals are expected to be a professional leaders who can set clear directions, goals and targets that take a team of teachers from where they are and help raise the school quality to a higher level. For longer term, a kindergarten principal may eventually take on the role of a researcher, working together with teachers to conduct action research, identifying strengths and weaknesses of child learning, collecting data and information, leading to the implementation of new strategies and programmes that will be of benefit to children.

Experience by itself does not result in good teaching practices, but a collaborative effort utilising self-reflection strategies can be an effective means for professional development and quality improvement. To reap positive outcomes, principals and management teams have to create a working environment and climate that is open, supportive and nurturing for professional development.

2.5.3 Peer Collaboration and Dialogue for Quality Improvement

Rodd (2006) observed that many pre-school teachers are teaching in isolation. This happens in Singapore too. Teachers are so preoccupied with their own teaching in their own individual classrooms that they have few opportunities to meet with other educators or observe children and teachers in settings outside their own classroom environments. Teachers also have other roles in addition to classroom teaching, such as notice board duties, celebration events duties and administrative duties. With little support, teachers become professionally isolated. They are likely not to be able to see their own problems and situations let alone those related to other teachers or to the system within which they work.

Research studies (Anning & Edwards, 1999; Arbaugh, 2003; Harada, Lum & Souza, 2003; Li, 2003, 2004; Souto-Manning & Dice, 2007; Yuen, 2004) indicated that self-reflection and collaborative learning within an organisation benefit the organisation's members. This benefit includes professional growth of staff and their personal capability in dealing with changing demands in their working profession, specifically in raising quality standards of child-related services that they provide.

Moller and Katzenmeyer (cited in Murphy, 2005, p.144) noted that the use of "collective and collaborative professional development experiences" is worth adopting. Teachers with a wealth of classroom experience could provide considerable input in this process of collective and collaborative professional development. Through reflection individually and collaboratively with colleagues within their own organisation, many problems and issues can be addressed and resolved. Due to limited resources, a centre cannot afford to send too many teachers to attend courses, conferences and workshops every year. With new changes in policies and curricula, more and more teachers are beginning to notice their need for renewed professional skills. Practitioner associated training, such as workshops, seminars and courses are mainly offered by outside training agencies. A more feasible and less resource-taxing way would be to use teachers as resources for professional development. Many administrators are not aware that professional development can be effective within an organisation. School-based learning and sharing provide practitioners with opportunities to engage in collaborative investigation of curricular matters and of pedagogical innovations (Yuen, 2004).

There are models of professional development that focus on professional development within an organisation, capitalising on a collaborative approach to engage all staff and transform the organisation into a learning community (Anning & Edwards, 1999; Arbaugh, 2003; Harada, Lum & Souza, 2003; Li, 2003, 2004, Senge, 1994). The self-reflection and self-renewal approach

discussed by Anning and Edwards (1999), Barth (1990), Kagan (1991) and Li (2004) is based on the belief that improvement of teaching is a collective mission and not an individual effort. Collaboration involves an environment where individuals not only share centre or school related obligations, but also work together in risk-taking, goal-setting, programme planning and implementation (Little, 1984). Li's study (2004) concluded that school-based professional development projects help create a school culture. Self-improvement could be promoted through sharing at different levels within an organisation. Annual self-appraisals of programmes and services could be a focus for discussion at sharing sessions. Munton, Mooney & Rowland (1997) based on a team study, concluded that self-assessment as a strategy was well received by the participating service providers and it was perceived as an effective agent of change (p.72).

Similarly, in Yuen' study (2004) of a school-based project in five kindergartens in Hong Kong, it was found that "professional development that builds around collegial interaction" had a positive impact on teaching practices (p.143).

Murphy (2005) examined the reasons why professional development enhances teachers' performance and learners' outcomes. He concluded that the professional development programmes that are most effective have the following characteristics:

a) the programme focusses on resolving instructional problems, daily practices, job-related issues;
b) the programme is highly valued by practitioners;
c) there is a positive attitude toward professional growth and development;
d) the programme is part of the long-term plan;
e) there is sufficient time for staff dialogue; and
f) there is continuous support from and involvement of administration team.

(Murphy, 2005, p.147):

Opportunities to acquire new knowledge and effective practices for teachers should not be a one-time affair. Opportunities should be on-going and for the whole staff. To effect change for quality improvement, a critical mass of teachers who are competent and confident leaders in their areas of responsibility is necessary.

2.6 CHAPTER SUMMARY

This literature review has provided evidence in relation to the key themes and their interconnection that lead to ways of examining the overarching questions of this study. I am convinced that people are self-motivated learners, whether they are adults or young children and both learn by doing. It is through the process of interacting with information and internalizing it that we become responsible for our own learning and become capable of understanding and interpreting the world around us (Piaget, 2003). Learning take place in a culturally and socially rich environment where learners communicate with one another and use language in a group setting that allows learning to take place (Vygotsky, 2003).

This literature review also investigated the merits of having self appraisal and collaborative learning as ways to benefit the quality improvement in kindergartens. The ways in which early childhood teachers develop professionally, and the importance of reflective, collaborative practices and professional dialogue as avenues of professional development are topics that have been explored. The main study, through a case study approach, intended to find out whether the self-appraisals may be such an avenue for quality improvement.

With this aim of searching for the most effective ways to improve quality of pre-school education, this study assessed three variables that were perceived as evidence of quality improvement. This case study, though a qualitative

one, has incorporated three quantitative measuring tools to collect such evidence. They are the child involvement level as an indicator for quality learning, the adult engagement level as an indicator for quality teaching and the quality of the environmental setting as an indicator for quality conditions for effective teaching and learning. In Chapter III, these variables and indicators are presented.

CHAPTER III
THE VARIABLES AND INDICATORS OF QUALITY

3.1 INTRODUCTION

The three variables used as indicators of quality of early learning for this study are child involvement, adult engagement and environmental setting. The following sections explain the rationale for selection of these variables and the key concepts of these variables as indicators of quality.

3.2 RATIONALE FOR SELECTING THREE VARIABLES

To assess early learning programmes, Pascal (2005, 1993) and Laevers (2005c, 1994) suggested that researchers examine input, process and output. Input refers to the contextual conditions or treatment characteristics of an institution that enable learning to take place. Some of these features are group size, teacher-pupil ratio, space, furnishing, equipment, teacher qualifications, safety procedures and health practices (Harms, 1992; Pascal & Bertram, 2005, 1999b). Output refers to the learning outcomes that may be short- or long-term, for example, school readiness, competence in language and mastery of motor skills or self-management skills (Shore, 1998). Process refers to the traits shown in the meta-cognition of a child while participating in day-to-day activities at the pre-school. This refers to the child's level of concentration, capacity for logical thought, ability to infer, mastery of problem-solving skills and the frequency of interaction

between adults and the child and between the child and his/her peers (Baillargeon & DeVos, 1991; Berk, 2008; Donaldson, 1978; Goswami, 1998; Laevers, 2005, 1994, 1993; Pascal, 2001; Pascal & Bertram, 1999a).

The definition of quality presented took into consideration the views and perspectives of various stakeholders as described by Katz (2000). From the perspective of children, which Katz termed the 'bottom-up' perspective, this study identified child involvement as an indicator for quality learning. From the perspective of teachers, an "insider" perspective, this study emphasized the critical role of teachers as facilitators in enhancing learning, and in particular, the quality of their interaction with children. The perspectives of parents, professionals and researchers, also known as the "outsider" perspective, involved quality settings, which were correlated to quality learning. These quality settings refer to contextual conditions that are stimulating and rich, for effective child learning.

With the eventual aim of searching for the most effective ways to improve quality of pre-school education, this study assessed three variables that were perceived as evidence of quality improvement.

a) the quality of learning with reference to child involvement levels;
b) the quality of teaching with reference to adult interaction with children;
c) the quality of setting, with reference to the quality of the environments created to enhance learning.

The proposed framework of indicators was based on a conceptual model which was developed by Laevers (2005d, 1994b) and his team for the Experiential Education Project in Belgium. The Experiential Education Project tested and validated two research instruments to assess quality learning and quality teaching. Pascal and Bertram (1997a, 1997b) adopted and adapted the model for their Effective Early Learning project (EEL). The research tools

were translated into English and used by the EEL project team. The following sections elaborate in-depth on what constitutes these indicators of quality.

SECTION 1: VARIABLE ONE
CHILD INVOLVEMENT AS AN INDICATOR FOR QUALITY LEARNING

3.3 CHILD INVOLVEMENT AS AN INDICATOR FOR QUALITY LEARNING

Child development is a complex and dynamic process in which all domains of development, be they physical, cognitive, social or emotional, interact with each other continuously. How does a child learn? This will always be of interest to educators, parents and professionals. In the last few decades, Bruner, Case, Diamond, Feuerstein, Gardner, Piaget and Vygostky, amongst others, have laid the foundation for educators to establish a personal theory of learning. What follows is an explanation of some theories of child development that are currently influential in the field of early childhood development.

3.3.1 Constructivists theories

a) Piagetian theory

Piaget is often described as the founder of constructivism as his work in the psychology of intellectual development has dominated the field for several decades. He advocated that human learning is constructed and that children and adults both learn by doing. It is through the process of doing that we discover new information. It is through our own actions of taking in information, working with the information and internalizing it, that we become responsible for our own learning and become capable of understanding and

interpreting the world around us. Piaget noticed that we learn about the world in two ways. First, we assimilate new knowledge to reinforce our existing understanding. Second, we accommodate new knowledge that challenges our existing perceptions. It is through learning by doing and being physically active in manipulating our environment that a child learns new knowledge (Berk, 2008; Ebbeck, 1996; Piaget, 2003, 1995; Schaffer, 2003). Piaget, without emphasizing social factors, did acknowledge inherited traits and environmental opportunities as other influences on cognitive development.

However, his predictable sequence of four major stages of cognitive development has drawn criticism (Bee & Boyd, 2004; Donaldson, 1978; Shaffer, 2003). This notion of the Piagetian theory is similar to maturationalism, which states that development progresses via a normal path through an orderly sequence of stages, each with its own characteristics or behavioural norms. Bee and Boyd (2004, p.150) quoted Mishra's study to reflect that children who attended school progressed through Piaget's stages more rapidly than those who did not. In other words, for the acceleration of child growth, intervention may help. However, Donaldson (1978) argued that Piaget's observations of the three children in his studies did not provide an adequate representation of all children for a conclusion, hence underestimated the ability of infants to store, remember and organize sensory information. Donaldson (1978, pp.11-25) also used Bruner's experiments to prove that young children were able to perceive things from the point of view of another person. Tamburrini (cited in Connor, Lofthouse, Geoff & Marion, 1990, pp.102-105), on the other hand, defended Piaget's point of view, arguing that we should not deem Piaget's tests invalid. He advocated that Piaget's observations were valid for assessing the overall generalized competency of a child in relevant contexts.

Nevertheless, Piagetian theory emerged as a viable alternative when behaviourists were dominating and has stimulated considerable research on child development in the last decades. As a constructivist, Piaget's theory has

been a major and positive influence on early childhood education as it advocates discovery learning and learners taking responsibility for their own learning. It encourages practitioners to facilitate child growth by building on their interests and prior experience. Piagetian theory also encourages care-givers to provide children with learning experiences that are rich, meaningful and relevant to them, giving them opportunities to explore, inquire and invent (Bee & Boyd, 2004; Berk, 2008).

b) Vygotsky's theory

While Piaget portrayed learners as constructing meaning primarily through their own actions on the environment, Vygotsky emphasised the importance of the child's culture and social contexts as sources of guidance and support for learning. He noted that children live in a culturally and socially rich environment that affects their cognitive development. He believed that mental activities, such as problem solving and categorisation, are affected by the social interactions children experience. Adults and peers around the child have a great impact on the child's developing cognition. Through social interaction, that is, person-to-person interactions, children go through a mental process that allows them to acquire a deeper understanding of concepts (Bee & Boyd, 2004; Berk, 2008; Ebbeck & Ebbeck, 1996; Schaffer, 2003).

It is through communicating with one another, especially mature adults or peers, and using language in a group setting that children learn new knowledge and reach heights they would be unable to attain otherwise. Vygotsky acknowledged the fundamental role of language development in effective learning of a child. Smith (1992a) described language as 'inner speech' and her interpretation of Vygotsky's view on language development was:

> *Language is first mastered collaboratively, with an adult or a more competent peer, solely with the objective of communication. Then it becomes internalized and serves as a means of conscious control and thought (Smith, 1992a, p.157).*

Another essential feature of Vygotsky's theory is the concept of the "Zone of Proximal Development" (ZPD). Dixon (2003) described Vygotsky's ZPD that:

> *it is basically the gap between what you can do on your own and what you can do with the help of somebody else or the distance between their actual level and their potential level is what Vygotsky called the zone of proximal development (Dixon, 2003, p.46).*

In other words, when a child's learning capability is in ZPD, where the child cannot yet manage the problem or task by himself or herself but can accomplish it with the help of more mature partners, either adults or peers, it is then that learning takes place and cognitive development occurs. The task, whether it is teacher assigned or child initiated, if too easy, will bore the child and little real learning will take place. In this case, the child is in the Zone of Actual Development. If the task is too difficult, the child will be frustrated, and the learning outcome will remain unmet. This would be the Zone of Future/Potential Development. It is within ZPD that the task level almost matches the child's ability. Hence, the child is challenged to accomplish the task if given appropriate guidance by more mature and capable partners, such as teachers or peers.

Knowing that a child is a social learner, what are the conditions that will allow learning to take place? Educators are most interested to know how to create such conditions. Vygotsky's concept of ZPD explains the conditions under which learning occurs. This process of adult challenging the child and guiding the child to accomplish a task within ZPD is termed "scaffolding" the child's learning. This idea of scaffolding was developed by Bruner (1972, p.693). He believed that successful education relies very much on how well educators match materials and experiences to the child's present level of

cognitive functioning and how well the educators extend the child learning beyond this.

Constructivism has had a great influence on how educators perceive child learning. The theories of both Piaget and Vygotsky are relevant to this study in that children are active and social learners and are responsible for their own learning. Teachers, being facilitators, should therefore provide a stimulating and rich learning environment and structure their teaching skillfully. For example, teachers should employ different cooperative learning strategies so as to allow children to explore and discover things around them in group settings.

c) Bruner's findings

Bruner (1996) also noted that children need to interact actively with their environment to make sense of it. He shared Piaget's and Vygotsky's belief that learners actively construct their own knowledge through problem solving. A social environment, he believed, was the key to guiding and challenging the child to learn new knowledge. He commented that education has become too preoccupied with a computational view of learning, concentrating on information inputs, processing and outputs as key elements of the learning process. He put forward the case for a cultural view of learning asserting that the community and cultural identity shape the minds of individuals. Bruner (1996) noted changes in psychological theories over recent years and urged educators to view learning as multi-faceted and not just as a pure cognitive process. He highlighted three features that the psychologists perceived as crucial to effective learning:

i. the important role of culture in cognition, which supports Vygotsky's socio-cultural approach to learning;

ii. the important influence of emotion on affective and dispositional cognition as advocated by Goleman (1996) and Gardner (1993, 1983); and

iii. the importance of social competencies to cognition.

d) Post-Piagetian works

Tamburrini (in Connor, Lofthouse, Geoff & Marion, 1990, pp.102-105), who defended Piaget's conclusions, expressed the view that in some specific contexts, a child will think at a higher level than he would in a standard Piagetian test if there were conditions favourable to the child involved in that situation. Gardner's multiple intelligence theory and Case's structural theories (1991) intend to build a model of intellectual development that would explain why a child would perform better cognitively in these specific contexts. These theorists are extending Piaget's seminal work.

e) Gardner's multiple intelligence theory

Gardner's (1993, 1983) multiple intelligence theory recognises human potential in different realms of intelligence: verbal, logical, spatial, musical, kinaesthetic, interpersonal and intrapersonal. He observed that children combine these intelligences to understand ideas and solve problems. Taking this multi-dimensional approach, Gardner advises that learners be encouraged to make comparisons or analogies from different domains and perspectives, so as to acquire a more holistic and comprehensive picture of a topic, concept or idea. Uniquely, the theory encourages different ways to express an idea, be it through speaking, writing, pictures, movies, acting or music. These multiple forms of expression help learners with diverse learning abilities and learning styles understand and interpret things and the world around them more effectively (Gardner, 1993, 1983).

f) Case's model

Case (1991) supported the notion that Piaget's tests were valid for assessing the overall generalized competency of a child in relevant contexts. Case was also influenced by the information processing theorists that the human mind be viewed as a symbol-manipulating system through which information flows (in Berk, 2005, p.23). Hence, he believed that children have the ability to make connections while processing information that is presented to them in a meaningful manner. As summarized by Ebbeck, Case perceived a child's mind as "both general-purpose and modular, and is best termed as multi-level, thus being like a staircase but importantly multi-dimensional and highly adaptive" (Ebbeck, 1996, p.17).

In summary, Perkins (1999) noted an increasing understanding of how human beings acquire, retain and use information, and how children respond to new knowledge and are motivated to learn. These constructivist theories provide insights into the various learning processes. Educators, therefore, must create opportunities for diverse learning experiences for individual children, by adopting various strategies, catering to diverse talents and presenting information with an association that will help children make sense of the world around them (Laevers, 2005b, Laevers & Heylen, 2004; Gardner, 1993, 1983).

g) Contextualised theories

The bio-ecological or contextualised theory (Bronfenbrenner, 2005, 1994, 1976; Bronfenbrenner & Morris, 1998) has had a significant impact on early childhood education. Bronfenbrenner concluded this theory by examining the contextual conditions of a child's life. On a micro level, the child's circle of influence consists of his/her parents and immediate family members. The circle of influence extends to the neighbourhood, community, social and cultural contexts in which the child is living in. At the macro level,

the child's circles of influence include national, regional and global factors. It is within this complex system of relationships, affected by multiple levels of the surrounding environment (cited in Berk, 2005, p.27), that the child's development and behaviour are constantly being shaped. Bronfenbrenner's bio-ecological theory helps us recognise that there are many ways in which children grow, develop and learn. These various contextual conditions affect all the developmental domains of a child.

The values and beliefs specific to the community and society affect how pre-school education is provided, for these beliefs influence the organisations and practitioners who deliver the services. For example, as stated in Section 1.2.2.1, since 2000, the Singapore Government has advocated that pre-school education remains in the hands of the community and private sectors, but not under the purview of the government directly. The Government is keen to raise the quality standards of pre-school education by setting direction, desired outcomes, developing a curriculum framework, setting teacher training pathways, conducting research and improving the regulatory framework. As a result, pre-school service providers have been moving towards a 'market approach' (Hayes, 2000, p.95) to their programmes and services.

Besides political and social factors, educators must take into consideration the family and the social and cultural background of the child when they make choices to help children grow and develop. Some research studies by Hayes (2000), NIHCD (1998, 2000a) and Sharpe (2000) illustrate that those children from broken families and disadvantaged homes may have more behavioural problems and gain less academically. Ebbeck (2001, p.36) cited the studies on the diverse child rearing practices amongst immigrant families in Australia and advocated that for development to be extended, the child rearing practices and the expectation of the home need to be congruent with the practices and educational goals at the early learning setting. She highlighted the need to provide better linkages between in- and out-of-school learning

and to gain knowledge of the socio-cultural background of the families so as to maximise each child's learning potential (2001, p.44).

In brief, constructivists believe that learners with their prior knowledge influence the cognitive development that is facilitated by the processes of self-regulation. Constructivists note that people adapt and change their existing understanding in relation to new concepts. This meaningful learning occurs through reflection and resolving conflicts that help move their understanding to a higher level.

3.3.2 Quality Early Learning

Based on the above-mentioned theories of child learning, educators have a better understanding to how a child learns. The next question parents and educators ask is: How do we know when the child is learning?

With so much public funding, whether or not young children's learning should be measured has become an issue for debate among researchers, practitioners, policy makers and funding agencies. For accountability purposes, measuring young children's learning has helped them make informed decisions on funding provision and strategies to facilitate children's learning and development and to identify and state their assumptions, perceptions and beliefs about children and their learning (Karoly & Bigelow, 2005; Karoly, et al., 2001, 1998; Kishida & Kemp, 2006).

3.3.2.1 Measurement issues

A further question asked relates to what should be measured - the cognitive, affective, or psychomotor development of a child? Cognitive measures such as using achievement tests, readiness tests and aptitude

tests focus on knowledge, skills and abilities that a child has acquired. Affective measures determine a child's concept of self, social skills and attitudes among others. Psychomotor measures check the motor skills that a child has acquired as physical movement takes on an important meaning in early childhood. However, the field of measuring effective learning in young children is not without controversy. Standardised tests tend to over emphasise the achievements of children at the point of testing (Blenkin, 1992; Kwan, 2000). In the last two decades, many assessment schemes for young children have been overly academically focused. Achievement measures have become the key outcome sought and the focus of many recent policies related to early education and care neglect other areas of children's learning, such as acquiring a love for learning, self-confidence, personal well-being and social interaction. Early childhood educators have the professional responsibility to effect learning, but not necessarily for learning that is primarily geared towards high scores in achievement tests.

Before learning outcomes are measured, children need to acquire a disposition towards learning and a high level of involvement if effective learning is to take place. In the Accounting Early for a Life-Long Learning Project (ACE project), Pascal and Bertram (1999a, 1999b) urged practitioners to widen their perspectives on children's learning outcomes and strengthen their abilities to support and assess those other non-academic areas of children's development, such as children's disposition to learning, their respect for themselves and others, and their well-being (Laevers, 2005, 1994; Schweinhart & Weikart, 1993).

3.3.2.2 Child involvement as an indicator for quality learning

Laevers (1994) recognised the need to assess the quality of an education setting based on three aspects: treatment characteristics, process variables and the effects of education. However, he was of the view that the

child's action is "a more precise point of reference for the assessment of quality" (1994, p.160). Thus, it is necessary to identify indicators that assess the child's actions related to the desired outcomes. The concept of involvement is one of the key features of the Experimental Education (EXE) project being carried out at the Katholieke Universteit of Leuven, Belgium since 1989. Laevers and his research team believe that to judge an educational institution, the focus should be on two dimensions: the learner's degree of emotional well-being and the level of involvement. Their research so far has concluded that involvement is a good indicator of the occurrence of developmental processes in the child (Laevers, 2005, 1994, 1993). In contrast to using learning outcomes, the use of child involvement as an indicator gives immediate feedback on the quality of learning. It is performed through observing the child's behaviour and judging the level of child involvement while he/she is engaged in an activity, be it planned by adults or initiated by the child.

The EXE project, with its use of involvement as a quality indicator for effective learning, has offered educators a better understanding of how context variables impact upon education outcomes. For example, when context variables, such as the learning environment, teachers, resources and instruction are constant, one of the possible factors contributing to the different learning outcomes could be level of involvement of learners.

The project also highlighted the benefits that teachers gained. The participating teachers in the project used the child involvement scale with a sense of purpose. These teachers were more sensitive to the non-involvement of a child. After noticing signals of non-involvement, they employed some strategies to help the child increase his/her level of involvement, so as to effect learning. These teachers were not merely implementing some teaching strategies or methods, but were constantly getting immediate feedback from children about the effectiveness of their strategies and methods employed. Hence, the participating teachers found

the processes rewarding and gained professional satisfaction (Laevers, 1994, p.168).

The EXE project supports the notion that development is “learning in depth” and development is a “dynamic process” (Laevers, 1993, p.55). Involvement that entails intrinsic motivation driven by the exploratory needs of a child can be used as a criterion for assessing the quality of education. Involvement is a conclusive indicator for developmental processes, not only because it shows that a child is putting in effort cognitively, physically and emotionally in doing a task, but also because the child’s full capabilities are employed in doing the task. The involved child is operating in his/her zone of proximal development (Laevers, 1994).

Laevers (1998) advocated that involvement deserves an important place in any attempt to assess effective learning and the quality of education. He said that “in the context of evaluative research, the status of involvement as a process variable could offer a short cut in efforts to assess the learning outcomes of education” as it is an “important condition for real developmental change” (p.71).

3.3.3 The Concept of Involvement

3.3.3.1 Concept and characteristics of involvement

To understand the concept of involvement, Laevers (1993), while leading the EXE project, asked two key questions: Firstly, when is learning taking place? Secondly, how do we know if learning is taking place?

The first question deals with the evidence of cognitive development. To answer it, Laevers made a distinction between superficial learning and deep level learning. He illustrated the difference using an example of students

learning poems. To achieve deep level learning, learners first need to be sensitive to rhythm and sound, and the simple perceptions of language. They may then move on to the level of appreciation of the expressive power of images created by these words and sounds (Laevers, 1993, p.56). This process of learning is considered by Laevers as being far deeper than the superficial learning comprising recitation and reproduction of verses.

It is through the process of deep level learning that the mental schema of an idea changes from a simple concept to a more complex scheme. This is similar to Piaget's concept of accommodation (Laevers, 1993, p.57). In brief, it can be said that learning takes place when deep level learning occurs. As educators, we have to create learning opportunities to favour the occurrence of accommodation or deep level learning. These opportunities could be activities that are created by adults or initiated by the child. When children are in a favourable situation for deep level learning, they demonstrate behaviour such as concentration, involvement and enthusiasm in the activities that they are engaged in. Laevers noticed that an involved child displays most of the following characteristics and signals of the following when he/she is dealing with a task:

a) Concentration: The involved child is deeply engrossed and nothing can distract him/her.
b) Energy: The involved child puts in full energy and effort in doing the task by displaying behaviour such as using full force when he/she is playing with a mechanical device.
c) Creativity: The involved child demonstrates that he/she is cognitively at the 'edge of his/her capabilities' (Laevers, 1994). The child also exhibits abilities to integrate knowledge, processes and skills in a creative and logical manner.
d) Facial Expression and Posture: The body language of a child is a good indicator of involvement. Visible cues include 'dreamy eyes', 'intense eyes', 'concentration' and 'boredom'.

e) Persistence: The involved child displays concentration in wanting to continue with the task.
f) Precision: The involved child is very meticulous and attentive to small details.
g) Reaction Time: The involved child is alert and reacts quickly to stimuli introduced during an activity.
h) Language: The involved child at times uses language to express his/her enjoyment and a sense of accomplishment.
i) Satisfaction: The involved child displays a sense of satisfaction and contentment with his/her achievement. This is evident through explicit expression, verbally and/or non-verbally.

(Bertram & Pascal, 2004, p.87)

Laevers described the involved person as being in "the state of flow", a concept that was defined by Csikszentmihayli (1979). Csikszentmihayli discusses "flow" as an energy that a person feels like being "carried away and yet being in control of the direction of the flow" (p.261). He defined the concept of 'flow' as a "particular quality of behaviour" that shows "total involvement, under self-control, has a clear sense of goals, immediate feedback, and a lack of self-consciousness" (p.257). When a person enters a flow state, he/she is fully absorbed in an activity during which loses his/her sense of time and has feelings of great satisfaction. Csikszentmihalyi describes "flow" as the state that one is completely involved in an activity for its own sake. The ego falls away. He believes that the person is completely absorbed and is using his skills to the utmost. Whilst his studies were based on adult engagement levels in activities such as composers of music and climbers, he recognised that 'flow' can happen to any one when a person experiences total freedom and has autonomy over the actions that he/she is involved in.

In this state of flow, the involved person puts in all his/her energy and effort in the task, and is highly motivated. This intrinsic motivation is driven by his/her

own exploratory needs and eagerness to understand and know. Over time, this level of experience will lead to the child being able to operate at a higher level of development cognitively, physically, socially and/or emotionally. In brief, deep level learning occurs within the child and this may be demonstrated by enhanced performance on measures of learning outcome (Laevers, 1993).

The state of "involvement" is when involved children are operating at the "edge of their capabilities". In other words, the activities that are created by adults or initiated by the child almost meet the abilities of the child. The child is at Vygotsky's Zone of Proximal Development. What the child requires is a little motivation, support and facilitation by partners who are more mature adults or peers.

Golbeck (2001, p.94) supported the research findings that "demonstrated severe limitations in young children's voluntary control of attention". His observations supported Vygosky's view that if the activity is too simple or too difficult, the activity "simply fails to engage a young child's attention". Golbeck also believed that "without attention, no learning occurs" (p.95).

3.3.3.2 Developing a child from an existing level to a higher level

The contributions of Piaget, Vygotsky, Gardner, and other developmental psychologists have enabled early childhood educators to gain a deeper understanding of children's development and schematic understanding of their world. More importantly, by implication, educators should incorporate this knowledge into their professional practice. It has to be acknowledged that the maintenance and improvement of the intensity of a child's involvement requires skilful intervention by teachers and adults (Kyriacou, 2001; Laevers, 1994; OECD, 1994; Stronge, 2002). An experiment in the EXE project focussed on children learning the concepts of floating and

sinking (Laevers, 1994) has shed some light on the maintenance of intense activity in children. Ninety six five-year-old children participated in the experiment. Each child was given a tub of water, a ping-pong ball, a marble, a door key, a spoon, a coin, plastic containers, meat-sticks, stones and branches. At stage one, the children played freely with the objects. At stage two, the children were guided by the adults to make predictions about what would happen when an object was placed in the tub. At stage three, the children were given two problems to solve, i.e. to make a stone float and to make the container sink. Video-recordings were made to provide qualitative information for the analysis. The data on the level of child involvement were compared to the IQ scores of the children. The findings revealed that most children were at level 3 of involvement regardless of IQ scores. The experiment also observed that a high level of involvement occurred at stage one when they played and experimented with the objects freely (Laevers, 1993, p.62).

From the research findings of the EXE project, Laevers believed that mastery of knowledge is closely linked to deep level learning. What has to be asked is how early childhood practitioners can increase the involvement of infants, toddlers and preschool children. Direct instruction and rote learning were not effective strategies that educators should employ, especially when dealing with young children. The EXE project tested infants taught by an experimental group consisting of 23 teachers. The research looked at classroom grouping, extent of free initiative, nature and diversity of the activities and the involvement of the infants. Theunissen (1994) identified three conditions found to be favourable for the improvement: First is the amount of free choice initiatives. Second is the type of materials and activities for the child and third is the teacher's interaction and ways to sustain interest.

To elaborate on these conditions, firstly there is a correlation between the level of child involvement and the amount of free initiative. This implies that children choose the activities that interest them the most and are at their level

of mastery. Secondly, learning environments, whether indoor or outdoor, if filled up and changed regularly with attractive displays, interesting toys, unconventional materials and new exhibits, are able to capture the children's attention and interest. The activities, either designed by adults or initiated by the child should contain varying degrees of difficulty to meet the different abilities of children. Thirdly, the importance of teachers' dialogue with children is highly emphasized by Laevers (1994). An adult's communication with children makes them feel accepted and respected. This would allow children to express their cognitive and emotional needs and teachers can, in turn, employ strategies and methods that may increase the involvement level of a child in an activity.

The early childhood teachers involved in the project noticed ten factors that favored child involvement. They are as follows (Laevers, 1994):

a) appealing corners in the classroom;
b) attractive materials in the corners;
c) unconventional activities;
d) activities matching the child's interests;
e) stimulating and enriching intervention to sustain the involvement level;
f) free choice activities with basic ground rules;
g) adult-child and child-child relationship building;
h) incorporating learning of behaviour, feelings and values in the activities;
i) working with children with learning problems; and
j) designing activities related to emotional problems for children with special needs.

3.3.4 Section Summary

Adopting the perspective of children that Katz (2000) termed a "bottom-up" perspective, this study identified child involvement as an indicator for quality learning. Katz (2000, p.12) commented that the actual or true predictor of the effects of a programme is the quality of life experienced by each participating child on a day-to-day basis. In relation to this study, the bottom-up perspective on quality was adopted. This approach required teachers to observe children to find out if they were focused, deeply engrossed and fully absorbed in tasks, whether they put in all their energy and effort to accomplish them and if they were excited about and satisfied with the tasks. These descriptors are described by Laevers (1993) as indicators of deep learning. This study, hence, aimed at contributing to pre-schools' and classroom teachers' knowledge and practice, by detailing a comparative analysis of child involvement levels before and after some improvement strategies were introduced by the teachers and the centre. This study also identified, from the perspective of children, contextual conditions that have a correlation with child involvement levels.

SECTION 2: VARIABLE TWO

ADULT ENGAGEMENT AS AN INDICATOR FOR QUALITY TEACHING

3.4 ADULT ENGAGEMENT AS AN INDICATOR FOR QUALITY TEACHING

3.4.1 Introduction

There are two possible starting points for evaluating teaching and learning. We can start with the teaching and work back to the learner, or start with the learner and work in the other direction. Teaching and learning are dependent on one another. The previous section discussed quality learning, while in this section, the focus is on the quality of teaching. Evaluating the quality of teachers and teaching is not new. It has, since schools were first invented, been a preoccupying topic of conversation among pupils, parents and various other stakeholders.

Teachers are at the heart of education improvement. To evaluate quality of teaching, MacBeath and McGlynn (2002, p.35) stated that there has been a trend to have objective approaches in assessing teaching quality, which has led to a proliferation of rating scales and observation schedules, enabling teacher behaviours to be quantified and indices devised to reveal certain trends, for example, the proportion of class time spent on teacher talk or pupil talk, on whole-class teaching, group work, individual work, the proportion of the time taken up with disciplinary issues, with administrative tasks of simple time-wasting and more. Other questions include how much talk is pupil-initiated or teacher initiated? What is the nature of the talk?

The most important role of a teacher is to facilitate learning. Katz (in Bertram, 1996, p.121) defined the roles of teachers in three aspects: maternal, therapeutic and instructional. The maternal and therapeutic roles reflect the importance of the affective domain for a child's needs. This can be

demonstrated through observing the level of sensitivity of teachers towards children. The instructional role refers to the amount and extent of stimulation and autonomy that a teacher creates for children in their learning process. Bredekamp (2006, 1998), in the guidelines of the National Association for the Education of Young Children (NAEYC, 2009), recommends that the key role of teachers is to facilitate children involvement. This can be achieved by asking questions, suggesting alternatives, or offering more complex materials or ideas to a situation.

3.4.2 What is Facilitation in Child Learning?

How much teacher instruction is considered as appropriate and when does it cross the line to become intrusive? Should it be teacher-directed instruction or teacher-facilitated learning? Vygotsky's theory gives educators an important reference for understanding the instructional role of a teacher in child learning. Vygotsky believed that children live in a culturally and socially rich environment that affects their cognitive development. He noticed that mental activities, such as problem solving and categorization, are affected by the social interactions children experience. Parents, teachers and more mature peers around the child have a great impact on the child's cognition. Through social interaction and person-to-person interactions, children go through a mental process that allows them to acquire a deeper understanding of concepts and ideas. It is through this collaboration and social interaction that learning takes place and the child develops cognitively. This instructional scaffolding by teachers allows learners to reach heights they would be unable to attain otherwise (Ebbeck, 1996; Rogoff & Wertsch, 1984).

Wertsch (in File, 1995, p.304), described the main aim of this supporting and mediating role of teachers as a process of moving a child from "other-regulation to self-regulation". Schaffer (1996, pp. 248-250) too, noted this process of "other regulated to self-regulated". In other words, in the

Vygotskian paradigm, teachers and the more mature or capable adults or peers, are perceived as resources to the children. In a classroom setting, at the initial stage of a learning activity, the child can operate only through interaction with the teacher or more capable and knowledgeable peers. In the process of this interaction, the child gains better and deeper understanding of the mental processes involved and takes on more responsibility for those processes. These initial mental activities are regulated by the more knowledgeable teachers and/or peers. Eventually, these more knowledgeable adults and more mature peers will have to transfer responsibility for problem solving to the child, whose abilities will likely be expanded. Teachers should ask themselves questions such as “Is the child ready to take up the challenge?” and “Did I allow responsibilities to shift to the child?” To answer these questions, teachers should be sensitive and aware of each child’s capabilities, pick up on cues and seize appropriate moments to challenge children, guiding them to move from one level to a higher one. Teachers should adopt varying strategies, ranging from more directive, less directive to non-directive, from more supportive, less-supportive to non-supportive, aiming to develop individual children from requiring other-regulation to self-regulation (Boyer, 2008; Cooper, 2006; Schaffer, 1996). In this process, relationship building between teachers and learners is crucial.

3.4.2.1 Relationships building

Hyson and Molinaro (2001) explained that our human behaviours are the results of our emotions, for example, anger, sadness, joy, interest, fear, surprise, shame, empathy, guilt and pride. Each of these emotions serves a particular adaptive or motivational function in human development and behaviour. Individual temperaments, cognitive capabilities of a child, culture and a nurturing environment are contributing factors towards the emotional development of a child. The findings of Water, Ainsworth and Bretherton

(Hyson & Molinaro, 2001, p.109) also indicated the value of early nurturance from warm and sensitive caregivers.

The recent brain research studies also support the importance of warm, stimulating relationships between adults and young children. Hyson and Molinaro (2001) viewed "these relationships as important contributors to how the brain organizes itself and as buffers of stress in young children's lives" (p.113). It is obvious that the teacher's emotional involvement in young children's activities helps sustain children's involvement in learning. Children's emotional development and wellbeing are a prerequisite for learning. Adults and people around the child have a strong influence on that development. This is also well evident by the research findings in South Australia by Ure (2004) and Winter (2003). Their studies revealed that children's development and learning can be enhanced under secure and emotionally positive adult-child relationships.

3.4.2.2 Attitudinal qualities for relationships

Rogers (1980) is widely praised for his people/client-centred psychotherapy, which has greatly contributed to psychological and educational practices. He advocated three attitudinal qualities that are related to all human learning situations. He believed that individuals have within themselves strength and power for "self understanding" and for making changes to their "self-concepts, basic attitudes, and self-directed behavior" (1980, p.115). To help a person grow, effective facilitation of learning depends very much on effective personal relationship-building between the facilitator and the client, or in a classroom setting, between teachers and learners. Three facilitative aspects of the relationship are needed to help create "growth-promoting climate" for the target client. They are: genuineness, acceptance and empathy (1980, p.115).

Genuineness, realness or congruence (Rogers, 1980, p.115) refers to an attitude in facilitators in which they "put up no professional front" when entering into a relationship with their client. For teachers to be facilitators in child learning, they should act as normal adults who have emotions and feelings, and can express boredom, anger, enthusiasm and sympathy even in front of learners.

Acceptance is also termed by Rogers as unconditional positive regard, caring or prizing (1980, p.116). Facilitators should perceive children as individual human beings in their own right. Each child is unique and has feelings and unique potentials to be achieved.

Empathy is the attitudinal quality of accurately sensing feelings and understanding the personal meanings of someone else. Teachers, as facilitators, who have the ability to understand the children's reactions from their perspective, will have a sensitive awareness of the way the learning seems to children.

In brief, we can see that Rogers valued highly the need for building relationships in the process of supporting the learning and growth of a client. In a pre-school setting, teachers' genuineness will help create an environment that is caring, trusting and respectful of all. This climate for learning could be enhanced when it includes a sensitive and empathic listening atmosphere. The learner will then be free from unnecessary ill-feeling and this will stimulate their self-initiated learning and growth as the learners are trusted to develop. Rogers and Freiberg (1994, p.161) used Schmuck's and Aspy's findings to support the notion of that the attitudinal climate of the classroom, as created by the teacher, is "a major factor in promoting or inhibiting learning". Bennett, Jordan, Long and Wade (1976, p.22) also found that at the elementary level, "indirect (or less hostile) teacher behaviours are generally more conducive to pupil growth on most achievement measures".

To understand teachers' interpersonal functioning in the classroom, Aspy and Roebuck (1977) initiated and carried out an extensive study to evaluate the teacher's interpersonal qualities. This study translated the qualitative dimensions of empathy, congruence and respect into quantitative terms. It adopted the Carkhuff Interpersonal Process Scale to assess a teacher's level of functioning using a five-point scale. They concluded that "teachers' levels of empathy, congruence and positive regard are positively and significantly related to student's cognitive growth, IQ gains and daily attendance" (1977, pp.11-14).

3.4.3 Teachers' Qualities and Skills in Interaction Process

What kind of teacher-child interactions enhance child learning? A study by McCartney *et al*., (1997) found out that the duration of verbal interaction with adults is significantly linked to children's language learning and social competency. Oliveira-Formosinho (2001) in her review of literature, looks at some studies on adult-child interaction (p.62). She quoted a study by Holloway and Reichardt-Erickson's work, which showed that the form of interaction, i.e. being responsive, engaging and democratic, is related to pro-social behaviour of the child. In 2002, the Clarke-Stewart study revealed that teachers' ways of responding to children, such as using directive, controlling and/or punishing measures resulted in less cognitive development in the children' (Clarke-Stewart, Vandell, Burchinal, O'brien & McCartney, 2002). DeKruif, McWilliam, Ridley and Wakely (2000) examined patterns of teachers' interaction behaviours in early settings and found out that the quality of early learning environment is broadly determined by the ways adult interacting with children.

In addition, Feeney and Chun (1985) in their review of research also commented on various studies and compiled a list of attributes and skills of effective teachers. These include teachers' values and beliefs, personal

qualities and skills, such as warmth, sensitivity, flexibility, honesty, integrity, vitality, compassion, self-confidence, capability for sustained effort. Other factors contributing to effective teaching include class size, classroom environment and school management support.

Teaching is situational in nature. Stremmel's finding (in File, 1995, p.309) showed that teaching quite often involves decision-making at the point and the construction of teaching techniques in the context of adult-child interaction. Effective interaction implies that, as a facilitator, a teacher has to adopt different methods and levels of assistance and guidance so as to give enough support to solve the problem. At the same time, the teacher encourages the child's independent functioning to the greatest extent possible. The child's progress from other-regulation to self-regulation takes time and effort as the child needs to internalize the skills and knowledge newly acquired.

Laevers (1994b), based on Rogers' concepts and theories, developed an instrument called the Adult Style Observation Schedule for Early Childhood Education (AStOS-ECE). This schedule is used to evaluate teaching quality. The instrument is built around three dimensions: Stimulation, Sensitivity and Autonomy. Laevers (1994b, p.12) describes "stimulation" as "the enrichment of ongoing activities by bringing in valuable information or giving impulses that provoke communication, action or thinking". He refers "sensitivity" as teachers giving responses that witness empathic understanding of basic needs of the child. As for "autonomy", he defines it as "respecting children's sense of initiative by acknowledging their interests, giving them room for experimentation, implicate them in the setting of rules and the solution of conflict".

3.4.4 Three Quality Attributes of Adult Engagement

In building relationships between a facilitator and a client, Rogers (1980) highlighted the three essential attitudinal qualities of the facilitator, i.e. genuineness, acceptance and empathy. With these qualities, a facilitator can engage a client more effectively to enable the client to make changes and to grow. In the context of learning and teaching, engagement implies that teachers have a personal commitment and responsibilities to engage the learners in deep level learning. Bertram (1996) points out that "engagement" can be taken as a research instrument, an indicator adopted by practitioners to assess the effectiveness of their own practice.

In the Rogers' paradigms, "sensitivity" and "stimulation" are two key aspects of quality human interaction as he said (cited in Bertram, 1996) that "… students learn more and behave better when they receive high levels of understanding, caring and genuineness, than when they are given low levels of them. It pays to treat students as sensitive and aware human beings" (p.133).

Bertram (1996), in his involvement in the Effective Early Learning Project (EEL) introduced the Adult Engagement Scale that is used to analyse the quality of teaching, focusing on the process of teacher-child interaction, teacher engagement with children. This instrument demands teachers to be sensitive and skillful in providing stimuli and opportunities for autonomy, guiding children to be able to self-regulate their behaviour and actions.

Bertram (1996) defines the concept of "engagement" that is based on Rogers' theories, Laevers' work and studies by Aspy and Roebuck (1977) about the adult-child interactions. Bertram (1996, p.133) in his thesis elaborates the concept of "engagement" as a hierarchical process comprising three elements: sensitivity, stimulation and autonomy. "Sensitivity" is a baseline condition for stimulation to take place. "Autonomy" is only possible if

"stimulation" and "sensitivity" are appropriately addressed. He captured the key features in the concept of "engagement" stated in the EEL project and defines "engagement" as

> *a set of personal qualities which describe the nature of the educative relationships between the adult and the child. These personal qualities will affect an adult's ability to motivate, extend, enhance and involve children in the learning process. An adult's actions may therefore be categorised as displaying 'engaging' qualities' or 'non-engaging qualities' (Bertram & Pascal, 2004, p.91).*

3.4.4.1 Sensitivity

Acknowledging that every child is a feeling child in the learning process, teachers need to be sensitive to children's well-being and respond to the basic needs of children accordingly. High quality of sensitivity can be achieved if a teacher displays the following traits:

a) is warm and demonstrates affection
b) makes positive body gestures and eye contact
c) praises effort and achievement
d) empathizes with the child's needs and concerns
e) listens to and responds to the child and includes child in discussion

(Bertram & Pascal, 2004, p.95)

It is clear that the affective quality of teachers' relationships with children means a lot more than just a smile. Pre-school educators need to perceive child observation as part and parcel of their daily routine. They should be sensitive to and respond to children's emotional cues and create opportunities to engage children in emotionally rich interactions and stimulating activities. Building a secure, intimate, growth-promoting

relationship with every child is the primary goal of an educator, especially in early learning settings. These relationships lay the foundation for motivation and learning and help children development in all domains (Bertram & Pascal, 2004, 1997b, 1993).

3.4.4.2 Stimulation

This refers to the amount of stimulus and responsiveness the teachers give to children in order to encourage them to sustain and extend the action or activity and to promote concentration. In kindergartens, the types of interaction adults have with young children are more often banal and cursory, requiring children to answer closed questions or provide labels (Cheong, 2000; Keong & Quah, 2000; Tan-Ngiam, 2000).

The value-addedness of adult interventions in the learning process has been well advocated and research-supported. Csiksentmihayli (1979), Donaldson (1978), Piaget (2003, 1995), Rogers (1994, 1980) and Vygotsky (1978) are some theorists who view the adult as someone who should be an active and sensitive observer, who looks for cues and seizes the learning moments of the individual children and applies different techniques and methods to help them develop cognitively, emotionally, socially and physically.

The observations of teachers' quality interventions as described here focus on the degree of motivation that they display. High quality of teacher intervention means that the teacher:

a) presents activities as enjoyable and motivating
b) is culturally and developmentally appropriate
c) is open, accommodates and shares in child's interests
d) encourages child to use their senses
e) links activities with the rest of the child's play

f) provides flexible routines enabling prolonged play

(Bertram & Pascal, 2004, p.95)

Hyson and Molinaro (2001) in their study in 1999 concluded that engaging children in activities is vital as they believe that children cannot learn if they do not have "sustained and effortful engagement". Enabling children to be engaged and continue to be engaged for a long period of time is crucial. This idea is similar to the concept of child involvement brought up by Laevers (1993, 1994b) as an indicator of deep level learning. Hyson's and Molinaro's (2001) research findings revealed significantly that "children were more engaged in learning activities of all kinds when the adults were emotionally warm, personal and involved" (p.117).

Stimulation is another quality attribute of teaching. Freire (cited in Pascal, 2003) articulated in 1972 in a dialogue between a teacher and learners that teacher co-constructed knowledge with children. This is based on the established relationship of trust and dialogue between teachers and children. Bruner (1996) also supports the idea that teachers and pupils learn together with teachers playing the orchestrating role in this co-learning process (p.27).

3.4.4.3 Autonomy

Bruner (1996, p.27) also believed that providing opportunities for children to initiate their own activities helps them become responsive to their social environment. He urged that we rethink our current pedagogical practices if we aim to help children become "active, questioning children seeking greater mastery over their world".

Autonomy is the extent of freedom that adults provide for children to experiment, make judgments and decisions, generate alternatives, and choose activities and express ideas. Piaget's belief (Ebbeck, 1996; Perkins,

1999) about children's cognitive development is well known. He believed knowledge cannot be given to children. A child constantly seeks stimulation to teach themselves. Piaget also believed that children discover knowledge and construct knowledge through the learning activities. Hence, teachers should give the individual child a choice as it fosters intrinsic motivation. When choices and options are given to children, they tend to perceive that they have control over their own action and they are empowered. Several studies (Glasser & Hopkins, 1984; Monty & Perimuter, 1987; Morgan, 1984) have shown that interest in learning activities is enhanced by less teacher control and more student choice in tasks. Their self-esteem and self-confidence are therefore enhanced.

In relation to autonomy, teachers should provide ample learning opportunities for children to initiate their activities and explore ideas and topics that they choose to embark upon, so that they can be in a state of 'flow'. Teachers who have acquired this quality will have adopted these techniques and skills as follows:

a) encourage child to be responsible for their actions;
b) facilitate self management and empowerment of the child;
c) enable child to choose and support child initiated ideas;
d) provide opportunities for experimentation;
e) encourage child to bring their activity to a natural conclusion; and
f) encourage the child to negotiate conflict and rules.

(Bertram & Pascal, 2004, p.95)

In a pre-school setting, for example, during the preparation of a snack, the teacher might help and guide the child decide how to ensure that there is a fair share of fruit or cake for each child. Teachers should see their role as fostering construction on the part of the child, as opposed to instruction by herself, and developing autonomy and cooperation, rather than requiring acceptance. Probably the most difficult aspect for teachers to learn is the relinquishing of control. Helping children become independent learners takes

time, especially if those children are accustomed to adult-regulation. This progress from other-regulation to self-regulation (Boyer, 2008; Cooper, 2006; Schaffer, 2003, 1996) takes time and effort as the child acquires and internalizes skills and knowledge.

3.4.5 Section Summary

The critical role of teachers is to create a physical, social, emotional and intellectual environment where children can learn to function as individuals in a group setting. A teacher has the responsibility to provide children with opportunities to become interested in centre-related activities which will further the growth of the children if the events are well planned, active, based on children's interests and usefulness. Hence, in relation to this study, the effect of the programmes is greatly affected by the quality of the teachers' interaction with children in various settings. In this study, adult engagement identified as an indicator of quality teaching, specifically on the three attributes - sensitivity, stimulation and autonomy - are described by Bertram (1996), Laevers (1994) and Rogers (1980) as essential elements for effective teaching. This approach to engagement encourages principals and teachers to identify those behaviours of teachers that enhance child learning. This study includes a comparative analysis of adult engagement quality before and after teachers gain awareness of what constitutes quality engagement with children. This study also identifies, from the perspective of teachers, some effective strategies to raise their professional competence in interacting with children. The link between a teacher's professional development and children's learning has been well documented (Barth, 1990; Day, 1993; Murphy, 2005; Owen, 1990; Rodd, 2006; Vander Ven, 1994; Yuen, 2004).

SECTION 3: VARIABLE THREE
LEARNING ENVIRONMENT AS AN INDICATOR OF QUALITY SETTING

3.5 LEARNING ENVIRONMENT AS AN INDICATOR OF QUALITY TEACHING AND LEARNING

There are a number of issues related to quality that are addressed in this study. For example, what is quality? What are the elements of quality? What are the approaches to achieving quality? How do we define and assess an early childhood centre as having excellent, good, mediocre or poor quality services? Who is responsible for assessing the quality standards of early childhood centres?

Farquar (in Groves, 2003, p.6) advocated that our views of quality are greatly influenced by the views of researchers and experts who tend to link quality assurance with public policy requirements. These researchers and experts have adopted mainly psychological approaches, using measurable and predetermined 'norms' as indicators of quality. However, Goodfellow (2001), Morgan (1996), and Scarr, Eisenberg and Dealer-Deckard (1994) have argued that these predefined indicators do not necessarily provide measures of quality provision. Some key related issues are addressed in the subsequent sections.

3.5.1 Discussion on 'Quality' in Early Learning Settings

In the last three decades, many positivists who believe in evidence-based and scientific-based knowledge have taken an objective approach to defining and operationalising quality. This approach has been challenged and alternative and more complex approaches have been proposed. The recent influence of post-modernist views on the quality debate have challenged

earlier definitions of quality found in the earlier literature (Brophy & Statham, 1994; Harms, Clifford & Cryer, 1998) and reflected more objective and technical approaches. The Kitemark System of quality assurance in UK and the Quality Improvement Accreditation System (QIAS) in Australia are some examples of the quality evaluation schemes to assess the service standards of early childhood centres. Generally, such approaches list a number of main factors that influence the quality of care. They focus on structural and process-related features of services such as the nature of adult-child interaction and teacher-pupil ratios (Brophy & Statham, 1994) as these features are shown to have a close link to child development outcomes.

Brophy and Statham (1994) explained the underlying beliefs influencing the conceptualization and measurement of quality in the early approaches. One belief is that the quality of childcare has a great impact on children's development. Another is related to children's rights. Child rights advocates called for a creation of a stimulating and rich learning environment for children's growth. A third belief is about meeting the personal and professional needs of adults, be these teachers or parents, who have a direct influence on children's everyday life.

What constitutes quality? What are the key factors researchers have identified that determine the quality of early childhood settings? What are the key factors practitioners find important in being able to offer quality service? These factors in general fall into two main categories: process criteria and structural criteria of quality. Process criteria are the children's interactions and their day-to-day experiences in an early childhood setting. Structural criteria are those contextual conditions created by service providers and practitioners to facilitate learning. These include space and furnishings, group size, teacher-pupil ratios, teacher training and qualifications and the support given to adults in the preschool. The studies done by NICHD (2006) and Kontos et al. (in Rosenthal, 2003) observed that structural dimensions are correlated with the quality of processes such as the educational experience and the

quality of interactions between adults and children and amongst children. Process variables such as the quality of adult engagement with children, child-to-child interactions, the child involvement level when performing tasks and the children's disposition to learning, were seen as critical elements that made a difference (Pascal, 1999a, 1999b), but were seldom used in the past to evaluate quality as they were less tangible and more difficult to measure.

a) Ten dimensions of quality

In UK, Pascal and Bertram (1994, p.105) involved stakeholders such as managers, practitioners, parents and children in their 1993 research project and the project identified ten critical dimensions of quality in early learning. They were:

i. aims and objectives;
ii. curriculum;
iii. learning and teaching styles;
iv. planning, assessment and record keeping;
v. staffing;
vi. physical environment;
vii. relationships and interactions;
viii. equal opportunities;
ix. parental partnership, liaison and coordination; and
x. monitoring and evaluation.

b) Seven subscales of quality

In USA, researchers engaged professionals and practitioners to develop assessment tools, such as the National Association of Education for Young Children's (2005) Guideline for Accreditation, and the Early Childhood Environmental Rating Scale-Revised (ECERS-R) by Harms, Clifford and Cryer (1998). The ECERS-R evaluates seven key domains of an early childhood setting. Forty three items under the seven domains give an overall

picture of the environment for children and adults in the setting. They included (Harms, Clifford & Cryer, 2005):

i. space and furnishings;
ii. personal care routines;
iii. language-reasoning;
iv. activities;
v. interaction;
vi. programme structure; and
vii. parents and staff.

Cryer (1999, p.46) noted that the quality elements listed in various evaluation instruments appear to cross international borders. The criteria listed in the NAEYC's accreditation guidelines (1998), for example, overlap substantially with the view of quality presented in the European Union's ECE quality definition as well as with the view of quality presented in the World Health Organisations Child Care Facility Schedule. The critical domains of quality programmes described above seem to also suggest a set of common core elements of best practices for early learning, such as interaction, physical environments and pedagogical related elements.

As discussed in Section 2.2.2, Chapter II, the critique of and debates over past approaches on the 'quality' concept of pre-school education have created a better understanding of quality as a relative concept that is linked closely to the social and cultural setting. The different values, beliefs, assumptions, needs and interests of different groups of stakeholders affect their views on pre-school programme quality (Bredekamp & Copple, 2006, 1997; Ebbeck, 2002; Farquhar, 2000; Goodfellow, 2001; Katz, 1993; McMullen, 1999; Moss, Dahlberg & Pence, 2000; Moss & Pence, 1994; Pascal & Bertram, 1994; Rosenthal, 2003; Scarr, 1998).

Moss (1994, p.6) further elaborates that value systems and cultural beliefs of the stakeholders influence quality. He explains that defining quality is a

complex as well as a political process (1994, p.5) as it involves 'negotiations, power and influence'. This is well supported by Penn's experience (1994) when she headed a team to define quality, identify essential quality elements and implement quality improvement measures in Scotland. She negotiated with and convinced the stakeholders, who had diverse social, cultural, political and educational backgrounds and had varied levels of professional experience and intellectual capacity.

A follow on question would be 'how is quality assessed?' Moss (2000) noticed that early childhood practitioners have moved towards adopting externally validated evaluation and regulations with pre-determined norms and outcomes to ascertain early childhood service standards. Areas assessed, among others, include physical facilities, the adult-child ratio and teacher training. As described in Section 2.2.2, Chapter II, Moss (1994) scrutinised two prospects of the concept of quality, namely analytical and evaluative. This concept of quality contains a dynamic component and a static component. At the operational level, the targets and goals are the predetermined performance indicators that can be measured before and after an action is taken. Practitioners tend to perceive quality in operational terms as a set of criteria by which the performance of a pre-school can be evaluated. Dahlberg and Asen (1994) acknowledged the operational definition of quality perceived by practitioners. However, they were concerned about the evaluation of quality becoming too focused on technical procedures. Evaluation using a pre-determined norm compares the goals to the outcomes, but neglects the process variables, which are good indicators of quality learning.

3.5.2 Concept of Environmental Quality for this Study

In this study, the environment was perceived as an enabler that is regarded as an evidence of quality improvement. The environment refers to a broad definition of the contextual conditions of a setting. This environment

should be purposefully created. According to Bredecamp and Copple (2006, 1997), the environment should be "intellectually engaging and responsive" (1997, p.125), so as to motivate children to get involved, to interact with materials, adults and children within the setting which will help them gain experiences for optimal development and growth. The role of teachers is to create the kind of physical environment that promotes initiative, active exploration of materials, and sustained and full engagement with peers and adults.

What are the elements of this physical set up that would promote children's sustained engagement in learning? Over the years, early childhood professionals, practitioners and researchers have established a body of research that suggests a set of common core elements of best practices for early learning. These elements of quality are largely evident in the tools developed and validated. These tools help define high quality programmes for young learners. As stated in Section 2.2.1 in Chapter II, some examples are the Early Childhood Environmental Rating Scale (Harms, Clifford & Cryer, 1998), the NAEYC accreditation system (NAEYC, 2005), the High/Scope Preschool Programme Quality Assessment scheme (High/Scope, 2003) in USA, the Quality Improvement and Accreditation System (NCAC, 2001) in Australia and the Effective Early Learning Programme (Bertram & Pascal, 2004) in UK.

In this study, in the selection of an appropriate tool that defines the quality elements of a conducive and stimulating environment for early learning in Singapore, the following factors were considered.

a) Have the elements of quality defined in the tool been validated and proven through research?
b) Do these elements of quality match the fundamental beliefs of the local preschool community?

c) Do these elements of quality fulfill a research function as well as the service support functions of monitoring, evaluation and improvement of services?
d) Are the elements of quality easily understood and practical for the practitioners' use?

3.5.3 Use of the Early Childhood Environmental Rating Scale

3.5.3.1 Importance of physical environment in early settings

The Early Childhood Environmental Rating Scale-Revised (ECERS-R) originally developed by Harms (1998) and further revised by Harms, Clifford and Cryer (2005) is concerned primarily with the influences on children in their immediate setting. It is based on the contextualized theory (Bronfenbrenner, 1994) that children's development is directly and indirectly influenced by the micro and macro environments.

The importance of physical environment in early years setting is also highlighted in the Reggio Emilia approach (Malaguzzi, 1993) as the physical environment is for the emotional stability of the children. Fraser (2000) illustrates that Reggio's educators "have termed the environment a third teacher" as the physical space and set-up will "inform and shape the kind of learning that will happen in the room" (p.53).

Harms (2000, p.27) argued that to provide high quality programs for young children, three basic needs of children must be met. These three factors that are interrelated are:

a) protection of their health and safety;
b) relationships with other children, their parents and the community; and

c) opportunities for stimulation and experiential learning.

The underlying principles of ECERS-R are based on constructivist approaches to teaching and learning. Children are perceived as active learners and social learners. Interaction is the key to a child's learning. Hence, the physical environment should encourage quality interaction. A quality learning environment will have materials and a room arrangement that encourages children to initiate activities, actively engage in the exploration of materials and remain interested in their involvement. Through planning and facilitation, teachers provide children with a sensitive and stimulating environment for learning.

3.5.3.2 Quality features in an early setting

Upon entering a pre-school classroom, the physical arrangement and the interactions among people are the two most obvious features to observers. Children are interacting with the materials and people in that setting. Harms (1992) put great emphasis on the design of settings to support the delivery of high quality programmes as she believed that children use the physical setting in a direct and hands-on mode (1992, p.184). Harms further elaborated that designing the setting of pre-schools to support high quality programmes necessitates exploring the relationship of the physical aspects of the setting to the desired child outcomes in the areas of safety, health and development (Harms, 1992, p.169). To ensure children's safety and good health, the environments should have physical features that take into account injury prevention and control, general hygiene, general health promotion, reducing the transmission of infectious diseases and staff health.

In a setting that supports learning, the space and furnishings, materials and arrangement should encourage active engagement in a child (Harms, 1992). Harms (1992) noted that a setting that supported child development and

facilitated engagement would require the knowledge and skills of a developmental psychologist, an architect and a pre-school educator (p.177). In a setting that encourages child engagement, the availability, variety, accessibility and appropriateness of materials and their arrangement are crucial as these make child engagement possible and allow prolonged engagement. A good quality setting would promote self-esteem and a positive self-identity, independence, pro-social behaviour and a variety of experiences. Learning experiences in various activities and different interactive situations can be more effective when the environment is stimulating as a result of well-selected materials and a well-designed layout.

For example, the choice of materials should be attractive, age-appropriate, accessible and ample so as to cater to children with diverse interests and abilities. For developing self-esteem and a positive self-image, Harms suggested that the room could provide displays at the children's eye level featuring pictures of children, their families and their pets and change these pictures regularly. If the objective is to help children become independent, the room could be furnished with child-size chairs and tables and shelves could be clearly labeled. If the intention is to promote group learning, chairs must be placed in a way that allows children to face one another. Harms (1992, p.179) also highlighted another basic environmental design that considered the various types of indoor or outdoor activities and the use of various equipment and materials to provide a good variety of learning experiences.

3.5.3.3 Adopting the ECERS tool

It is a well documented tenet of early childhood education that every child needs a safe, healthy, physically and emotionally nurturing environment for growth. Every child also needs a socially and cognitively rich and stimulating setting for learning and development. The content of the ECERS-R which includes forty three quality elements, promotes integrative and

interactive learning, a holistic approach and play-based curriculum design. It also recognises the importance of active learners and supportive adults in the learning process. Using the ECERS-R to assess environmental experience is in keeping with the general aims of the curriculum framework, "Nurturing Early Learners" (MOE, 2003b), introduced in Singapore. Hence, the ECERS was considered as an appropriate research tool for the assessment of the quality standards of the preschool programmes for this study.

In the ECERS-R tool, each critical element of quality pre-school provision is carefully elaborated in operational terms. For example, with reference to the quality element of "child related display", the authors (Harms, 1998) give clear descriptions of various levels of quality in a tangible and concrete manner. If a classroom has "appropriate materials for a predominant age group" and "some children's work is displayed", it is assessed as reaching quality level three for this specific quality element. To reach level five, the criteria become "much of the display relates closely to current activities", with "most of the display is work done by the children" and "many items displayed at child's eye level" (p.14).

Professionals and experts had helped the authors to identify the important quality elements that were relevant to the concept of quality in the early learning environment (Harms, 1988). The reliability of the instrument was validated by researchers and practitioners, such as Andersson (1989), Brophy and Statham (1994), Bryan, Clifford and Peisner (1991), Goelman and Pence (1988b), Kwan (2000), McCartney, et al. (1987), Sylvia (2003) and many others.

Brophy and Statham (1994, pp.71-72), however, cautioned users of ECERS that some elements of a high quality pre-school may be culturally-linked. Brophy and Statham studied four specific elements in the ECERS-R: play, parental involvement, ethnic and other diversity and interpersonal relationships. They commented that some items require modifications due to

different cultural settings. For example, in Singapore, kindergartens offer daily programmes of about three to four hours. Hence, the item 'nap and rest' is obviously less relevant and can be deleted. For the item 'space for privacy', the intention is to give children relief from the pressure of group life (Harms, Clifford & Cryer, 1998, p.13). In the Singapore context, with space constraints and a cultural value system of individualism, modification of certain descriptors was necessary.

Nonetheless, the use of the ECERS in research and for benchmarking purposes has been well documented (Harms, Clifford & Cryer, 2001). In the USA, North Carolina, Arkansas, Connecticut and Colorado are some of the states that use the ECERS in a variety of programme improvement and evaluation projects. Internationally, in Hong Kong, Japan, Chile, Canada, Sweden and Germany, several projects used the ECERS as a catalyst to raise the quality standards of pre-school education.

Besides the research function, the ECERS instrument also has the functions of monitoring, evaluating and improving of services. In each item, the descriptions under quality levels one, three, five and seven are separate indicators. Many examples are given to make indicators less ambiguous. For example, if a teacher rates the classroom child-related display at level three, it means that the class has appropriate materials for its predominant age group. The class also has some children's work on display. However, to reach level five, the class teacher should increase the display work, ensure that the display relates closely to current activities and ensure that most of the display is work done by the children and is displayed at their eye level. For improvement, the three descriptors listed under level five can be adopted as targets. For monitoring, these descriptors can be seen as a checklist for periodic follow-up. From the evaluation perspective, an assessment of all items and descriptors would enable the centre to obtain a profile of the quality standard of the centre.

In order to validate any definition of process quality, the definition must be easily understood and operationalised by practitioners, so that the quality elements can be measured. A description in each quality element should be clear, specific, measurable and observable. The ECERS allows practitioners to look at 'quality' at two levels. At the programme and service level, the tool offers a generic profile of the centre's standard. At the teacher level, ECERS offers clear targets and goals for areas that need attention. Besides, these indicators can also be used for monitoring and evaluation. Adopting ECERS to assess the quality of a centre's setting would enable the principals and teachers to identify targets for quality improvement.

3.5.4 Section Summary

In Singapore, regulation has less bearing on the meaning of the word 'quality'. It is argued that to promote high quality provision of pre-school education, a culture of self-appraisal has to be established. For this study, there is still a need for an instrument that distinguishes quality levels representing the different levels of service standards, from excellent to poor. Hence, this study aimed to detail a comparative analysis of centre quality, so as to allow pre-school principals and teachers to get to know their quality standards before and after improvement strategies were adopted. This study also aimed to identify, from the perspective of teachers, the most effective strategies to enable their professional growth.

In the next chapter, the discussion includes the selection of an appropriate methodology to meet the research needs and the rationale to adopt qualitative methods, specifically using a case study approach for the study. The experience of the piloting and its learning experiences will be described as an input for the main study.

CHAPTER IV
METHODOLOGY

4.1 INTRODUCTION

This chapter contains four sections. The first section describes the key elements of qualitative methods. The second section proposes and justifies the use of a case study approach as the research design for this study. It also suggests strategies that increase the validity and reliability of the study. The experience of piloting is included next in the third section. The last section provides information of the timeline and the procedures, the description on sampling and training, and the methods of data collection and interpretation involved in the main study.

4.2 RESEARCH DESIGN: QUALITATIVE INQUIRY

Eisener (1991) notes that qualitative inquiries are critical for the improvement of education, school, classrooms, and especially teaching. If we want to know whether children spending more time in school is good for them, we have to know what is going on in schools in terms of their strengths and their weaknesses and we have an obligation to inform stakeholders about school activities in ways that are “vivid and insightful” (p.22). He notes that “not everything can be said in a test score, for some things we need literary forms” (p.23) and ”qualitative judgment” is required when appraising

education. He values qualitative inquiry for the improvement of education as it "can provide the double advantage of learning about schools and classrooms" and "learning about individual classrooms and particular teachers in ways that are useful to them" (p.12).

This study explored ways to improve pre-school education in Singapore. Through the use of a qualitative inquiry, I wanted to know if a self-evaluation and development process could be an effective means to improve teaching and learning in a pre-school setting, including the teaching and learning environment.

4.2.1 Research Design and Process Questions

To plan the study, I used Merriam's definition of a research design as a guide. She described a research design as a plan for "assembling, organizing, and integrating information and it results in a specific end product [research findings]" (Merriam, 1988, p.6). To design an appropriate research study, the first step I took was to conceptualise and formulate research questions. Strauss and Corbin (1990, p.34) describe several sources of researchable problems such as the suggested research problem by a professor, the doubt or inspirational thought from a literature review or a problem encountered by personal and professional experience in a work place or life. As a regulator and a professional involved in pre-school education, I have observed the trend and development of pre-school education in Singapore since year 2000. I noticed that pre-school improvement had increasingly become a major talking point and had received strong emphasis by the authorities. The literature review reflected these pressing issues and they were the basis used to formulate the preliminary set of research questions for this study. The two primary questions and two secondary questions stated in Chapter I are as follows:

Primary questions

(i) In what ways, if any, would a self-evaluation and development framework improve the level of child involvement in the selected pre-schools?

(ii) In what ways, if any, would a self-evaluation and development framework improve the level of adult engagement with children in the selected pre-schools?

Secondary questions

(iii) In what ways, if any, would a self-evaluation and development framework enhance teachers' capabilities and skills in the selected pre-schools?

(iv) In what ways, if any, would the adoption of a self-evaluation and development framework improve leaders' capabilities and skills, and in turn help effect organisational change in the selected pre-schools?

These primary issues then led to the following process questions that also needed to be answered in order to address the issue of quality.

a) What kind of information and data were needed? What were the guiding principles that would help the researcher to know if this particular information was needed and how much was considered sufficient and what was termed as relevant?

b) How could I get the data that I wanted? What was the rationale behind deciding on the means of data collection? Would interviews, surveys, observations and documents collection be considered as appropriate and efficient means that would yield expected outcomes?

c) Who should be the subject of the study? Who should be involved in the process of data collection, the researcher, the principal, teachers and/or parents? Should any research instruments be used? If so, what were they? How could the issues of validity, consistency and reliability be satisfactorily addressed?

d) Where would the study be held, in a particular centre or a few centres, a particular group of centres or randomly selected centres? What was the sampling method used to select participants? How could the researcher approach and convince these participating centres? How could the researcher convince the teachers, parents and management team to agree on their participation in the study?

e) When was the appropriate time to approach the selected centres? When was the appropriate time for data collection? When was the good time to train the participants? How frequent should the meetings, discussion and mentoring sessions be arranged? When should the researcher start collating, compiling, coding and summarizing the data?

These process questions do not represent an exhaustive list. These process questions were generated based on the circumstances and situations that were encountered from time to time. As a researcher, I have to be resourceful, flexible and creative in solving different types of practical, professional and research related problems during the research journey.

4.2.2 Key Elements of a Qualitative Inquiry

What makes a study qualitative? Strauss and Corbin (1990) referred to the term qualitative research as any kind of research with “findings not arrived at by means of statistical procedures or other means of quantification” (p.17).

Some examples of qualitative research studies include an organisation functioning, behaviours, opinions and feelings of specific groups of people, and issues on interactional relationships. Merriam (1988) described the characteristics of qualitative methods as “particularistic”, “descriptive”, “heuristic” and “inductive” (p.21). These were the characteristic features of a research design that I was looking for at the initial stage of planning for the study. I recognised the uniqueness of the case, the descriptive nature and richness of the information and data that I would gather during the inquiring process in each of the selected pre-schools, and the exploratory and emerging findings that I would be likely to see at the end of the study.

To show that qualitative methods were appropriate for this study, I used Patten’s list of key elements of qualitative methods as a basis for justification. Views and comments of other researchers were quoted to support and discuss these elements (Bogdan, 2007; Creswell, 2005; Ercikan & Roth, 2006; Freeman *et al*., 2007; Jacob & Biklen, 1988; Johnson & Onwuegbuzie, 2004; Peshkin, 1993; Yin, 1994, 1984). The key elements of qualitative methods by Patton (1990, p.40) are elaborated in the following paragraphs.

4.2.2.1 Qualitative data

Patton (1990) noted that qualitative data are “details, thick description, direct quotations capturing people’s personal perspectives and experiences”. Eisner (1991) also suggested that inquirers not only should “account for what they have given an account of” (p.34), but also the underlying motive and quality of specific experiences of the people being studied. For this study, I believed that details and richness of the information were crucial as these allowed me to understand a situation that was complex and inter-relational and enabled me to have an in-depth and individual meaning on the specific issue under study. Unlike a quantitative approach that limits the study to a few variables, qualitative inquiry was viewed as appropriate for this study as

there was a need to find out the contributing and limiting factors for quality improvement in a pre-school. There were no pre-set factors that could be claimed to be determining factors for success or failure.

4.2.2.2. Naturalistic enquiry

The next element of qualitative research is about conducting inquiry in a natural setting. Patton (1990) noted that the intent of qualitative inquiry is to understand “naturally occurring phenomena in their naturally occurring states” (1990, p.41). Merriam’s notion is similar to that of Patton that ”a naturalistic inquiry focuses on meaning in context, requires a data collection instrument sensitive to underlying meaning when gathering and interpreting data” (Merriam, 1988, p.3). Jacob and Biklen (1988) also shared that the traditions from psychology, anthropology and sociology “assumed that the natural setting had an important influence on human behaviour” (1988, p.19). In my study of this natural setting, I hoped to be able to discover actual operational issues and relational processes happening in a dynamic setting such as a pre-school. Also, in a natural setting, besides seeing and hearing of the happenings, I could also collect other types of data, such as photographs, pictures, drawings and work created by the children and teachers and of the environment in which the participants lived.

4.2.2.3 Personal contact and insight

It is necessary for a researcher conducting a qualitative inquiry to go to the field. As pointed by Patton (1990) a researcher should seek to know ‘the inner self’ of the participants, such as their feelings, their perceptions, assumptions and values in seeing things and interpreting situations (1990, p.46). Eisner (1991) also agreed the ‘field-focused’ nature of inquiry and stated that the field work should not be limited only to human interaction

related phenomena in the setting, but also to the physical structure, classroom design, resource materials and other environmental related features in the setting (Eisner, 1991, p.32). Jacob and Biklen (1988) emphasized that a researcher should "document the participants' points of view, preferably through verbatim statements" (p.17). Merriam (1988) on the other hand, cited Lincoln and Guba's words that the researcher is the "primary instrument for data collection and analysis" (p.19). She claimed that the three personal traits of a good researcher would be:

a. very tolerant with ambiguity;
b. a good communicator; and
c. very sensitive to the context, the data, and personal bias.

(Merriam, 1988, p.48)

She believed that it is through this personal touch, regular interactions and on-going observations with the people in the setting that the researcher is able to discover the perceptions, underlying assumptions, feelings, beliefs and values of the people. Hence I chose to conduct observation as the main method of data collection for this study as this method was most likely to produce information that would illuminate the overall aim and specific foci of the research.

I believed that being involved in a case study approach allowed me to gain much insight. However, there was a concern about "objectivity" of the research. The debate on the issues of subjectivity and objectivity has been widely documented (Ercikan & Roth, 2006; Freeman *et al*., 2007; Jacob & Biklin, 1988; Johnson & Onwuegbuzie, 2004; Merriam, 1988; Patton, 1990; Peshkin, 1993; Yin, 1984). "Objectivity" has been perceived as the strength of the quantitative methods where instruments such as a predetermined set of criteria or responses are used to collect data and statistical tools are used to check the significance of the findings. The argument is that in qualitative inquiry, human biases and preferences are likely to occur. However, Johnson

and Onwuegbuzie (2004) argued that the “conduct of fully objective and value-free research is a myth” (p.16). As a researcher for this study, I chose qualitative methods as I wanted to gain insight to the situations, problems and concerns of the issues being investigated.

4.2.2.4 Empathic neutrality

Qualitative inquiry promotes empathy. Eisner (1991) described empathy as “the ability to be in the shoes of another human being” (p.37). Patton (1990) observed that humans have “purposes and emotions”, and behaviors and actions reflect the culture and values that people hold. He values ‘empathy’ as it is a “unique human capacity to make sense of the world” (p.56). With empathy, the researcher can present information from the perspectives of the participants as empirical evidence. This information includes description of emotions, feelings, perceptions, experiences and insights of the participants. This study was very process-oriented. One of the focuses of this study was on the relationships, between adult and child interaction and child to child interaction. In this study, empathy was considered as essential in order to have an understanding of how the teachers were approaching issues, facilitated learning and assessed the quality of child learning in a natural setting.

4.2.2.5 Context sensitivity and unique case orientation

Merriam (1988) and Eisner (1991) used the term “particularistic” and “attention to particular” respectively to describe the uniqueness and context-sensitivity of a qualitative study. Literature reviews show that generalisation has never been the expected outcome of a qualitative study (Eisner, 1991; Merriam, 1988; Patton, 1990; Stake, 2006, 1995). Patton (1990) explained

that cases are selected for study because they are of particular interest given the study's purpose. Patton also explained that "where the purpose of evaluation … is to arrive at generalisations, then some form of random; probabilistic sampling is the design of choice" (p.53).

My intention of this study was to seek an effective intervention strategy to effect change and improvement in a pre-school. Should the study show evidence of success or failure in implementing such a strategy, it was crucial to identify where significant change in particular attitudes, skills and behaviours occurred within the context. Some questions that were asked included: what were the things people experienced that made the framework what it was? What were the strengths and weaknesses of the framework that occurred in the setting? These questions are aligned with Stake's (1995) notion of the uniqueness of the case being studied.

4.2.2.6 Design flexibility

Lichtman (2006, p.10) noted that there is "no single way of doing something" as she recognised "multiple realities" while dealing with social interactions among humans or thoughts individuals have about a topic. As stated earlier, this study introduced an intervention strategy designed to effect change. The process of quality improvement of teaching, learning and setting involved social interactions and thoughts individuals had about their setting. Qualitative method was adopted as it allowed the flexibility in making changes when and if there was a need. This was due to the open-ended nature of the inquiry. Patton (1990) stated that the practical flexibility of qualitative methods allows the researcher to make changes to the research design and research focus as long as these changes make sense (1990, p.62). This flexibility nature in the research design does not mean that the study is less rigorous,

less reliable and less credible. A comparison by Lincoln and Guba (cited in Patton, 1990, p.61) on quantitative studies and qualitative research stated that:

> *What these considerations add up to is that the design of a naturalistic inquiry cannot be given in advance; it must emerge, develop, unfold … The call for an emergent design by naturalists is not simply an effort on their part to get around the 'hard thinking' that is supposed to preceded an inquiry; the design to permit events to unfold is not merely a way of rationalizing what is at bottom 'sloppy inquiry'. The design specifications of the conventional paradigm from a procrustean bed of such a nature as to make it impossible for the naturalist to lie in it – not only uncomfortably, but at all (in Patton, 1990, p.62).*

Patton (1990) described qualitative methods as dynamic and "discovery-oriented and capable of describing developmental processes and programme change" (p.106). With this exploratory nature, the research design is "partially emergent" when a study starts. This study was about change and improvement of an institution through implementing a self-assessment and development framework. I recognised that the change process was dynamic and would likely have an impact on the participating centres and the people in the settings. This was critical at different stages during the implementation phases as the implementation process was not a static process. There were anticipated and unanticipated consequences and treatments that had to be adjusted to suit individual circumstances. Thus, from time to time, adjustments to the framework and strategies were important so as to meet the local conditions, needs and interests of the participants.

4.2.2.7 Holistic perspective

Dewey (cited in Patton, 1990, p.51) viewed that "the child's life is an integral, a total one". Litchman (2006, p.11) noted that qualitative research

"involves the study of a situation or thing in its entirety rather than identification of specific variables". Qualitative methods allow the analysis to be holistic if the unit of analysis is a group of people, a community or an organization as a whole. Patton (1990, p.78) perceived a research inquiry from a systems perspective as he recognized the complexity and changing nature of the world. He suggested that a systems orientation would be helpful in making sense out of qualitative data. For this study, the unit of analysis was an organisation, i.e. a pre-school. This included people in the setting, children and teachers in the teaching and learning process, management and leadership involved in operating the centre, and the programme, such as day-to-day events, activities and interactions going on in the setting. It also included people related to the setting, such as the community, parents and authorities who would have an impact on the setting. In other words, this study analysed the overall programme, including people and setting. This study was a process of constantly searching for the parts to see the whole. It was not just the specific variables and total aggregate data of specific variables that could be predetermined.

4.2.2.8 Inductive analysis

Litchman (2006, p.11) described that qualitative researchers "begin with data and use those data to gain an understanding of phenomena and interactions". Patton (1990) advocated that qualitative methods are more inclined towards "exploration, discovery and inductive logic" (p.44). The categories of concepts and dimensions of analysis are derived from observations. In this study, I wanted to find out what were the contributing factors, if any, influencing change and facilitating quality improvement of the centre. Could it be leadership qualities, management systems, teachers' values and beliefs, a curriculum instruction or a combination of any of these factors? These emerging trends, if any, would allow me to share findings with other pre-schools with a similar background. It was impossible to anticipate in

advance how a self-assessment and development framework would adapt to local conditions and needs. As a result, it was hard to have in mind a pre-determined set of outcomes from the framework.

Besides recognizing the importance of the skills, competence, integrity and rigor of a researcher on establishing the validity of a qualitative study (Patton, 1990, p.14), Patton (1997) also valued the significant contribution of qualitative inquiry on building new knowledge. He agreed with Guba and Lincoln that:

> *[An] inquirer is himself the instrument, changes resulting from fatigue, shifts in knowledge and cooptation, as well as variations resulting from differences in training, skill and experience among different 'instruments', easily occur. But this loss in rigor is more than offset by the flexibility, insight, and ability to build on tacit knowledge that is the peculiar province of the human instrument (in Patton, 1997, p.113).*

For this study, qualitative methods were considered as particularly helpful and appropriate because the focus of the study was about centres adopting a self-assessment and developmental process for quality improvement. The issue of improvement in this study referred to enhancing teacher capabilities and skills, improving the learning environment and raising the quality of child learning. As I was involved deeply in this research process, I was as objective as possible in order to to gain insights into this dynamic and complex process of change (Fullan, 2001, 1991, 1982) that requires detailed, in-depth and comprehensive understanding of the setting and the interactions between people and environment and among people.

4.2.3 Adopting both Qualitative and Quantitative Measures for the Study

In recent years, discussion on quantitative inquiry and qualitative research has been moving towards integrative approaches (Ercikan & Roth, 2006; Jacob & Biklin, 1988; Johnson & Onwuegbuzie, 2004). Ercikan and

Roth (2006) reiterated that the purpose of research is to "generate knowledge rather than to concretely realize one method or another" (p.14). They supported the integrative approaches and advised researchers to use multiple approaches and modes and choose the methods that are appropriate for their research questions. Johnson and Onwuegbuzie (2004) developed a mixed methods research approach that incorporates the richness of data from qualitative inquiry and uses quantitative methods and techniques to reduce data, consolidate and analyse data (2004, pp. 16-22). Patton (1990) noted that quantitative measure and qualitative inquiries are not mutually exclusive and both qualitative data and quantitative data can be collected in the same study. Strauss and Corbin (1990), too, had no objection to researchers combining qualitative and quantitative methods in their studies.

This was indeed the case as this study was fundamentally a qualitative inquiry to investigate whether or not a self-evaluation and development process would help improve child learning, quality of teaching and the setting. As some data may be quantifiable but the analysis itself is a qualitative one, the researcher then selected three well validated measuring tools that have been used in the early childhood field to help in the process of data collection. The rationale for using these instruments was detailed in Chapter III.

The first tool used to supplement the qualitative study was the Child Involvement Scale. It was used to find out the levels of child involvement in various classes and different centres. This tool has been well validated by international researchers, such as the research work done by Laevers (1994), Pascal and Bertram (2000, 1999b, 1997a, 1997b), Ulich and Mayr (2002), Ure (2004) and Winter (2003).

The second tool was the Adult Engagement Scale. It was adopted to elicit evidence of the profile of quality teaching of sixty seven teachers in the selected pre-schools. This tool helped identify the critical elements of quality in teaching as there are three attributes of interactions between teachers and

children, namely sensitivity, stimulation and autonomy. This scale is a reliable tool that has been well validated by some international researchers (Lavers, 1993, 1994, 2000; Munton, Mooney & Rowland, 1997; Pascal & Bertram, 2000, 1999b, 1997a, 1997b; Theunissen, 1994).

The third instrument was the Early Childhood Environmental Rating Scale (ECERS-R). To implement a self-assessment and development framework, participating centres used the ECERS-R tool to establish baseline quality before going through a four-phase process for improvement: evaluation, action planning, improvement and reflection. This tool has been widely used internationally in research and for benchmarking purposes (Campbell *et al*., 2002; Harms, 2001, 2000; Kwan, 2000; Munton, Mooney & Rowland, 1997; Sylva *et al*., 2004).

4.3 ELABORATION OF A CASE STUDY APPROACH

4.3.1 Definition of Case Studies

Among the many qualitative methods, a case study is an approach that was adopted for this study. The following segments describe what case study is, what it entails, and why and how this study incorporates the key components of a case study in its design, scope and research process.

Yin (2003) views case studies as a strategy of an empirical inquiry that "investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (p.13). On the other hand, Merriam (1988) views case studies as a research design to examine a specific phenomenon such as a programme, an event, a person, a process, an institution, or a social group. Patten (1985) also notes the presence of the researcher in the chosen setting when a case study is being carried out. Bell (1999) regards case studies to be

looking into the various interactive processes at work. Though Yin, Merriam, Patten and Bell define the concept of case studies from different perspectives, there is a common theme emerging from their words, i.e.the linking relationships of the specific phenomenon being investigated. McLean (1991), an early childhood professional, knowing the complex and dynamic nature of childcare settings, advocates that case studies can help reveal the "complexity and richness of interpersonal relationships" in the life of people in an early learning setting. This was one of the reasons that prompted me to adopt a case study approach for this study.

4.3.2 Components of a Case Study

Like Merriam (1988), Yin (1994) also views a research design as a plan, a 'blueprint' for research. He suggests researchers develop a research design before embarking on a study as it can better ensure that the data and evidence collected do address the research questions (p.20). For this study, the key components suggested by Yin (1994) were used to plan the research process.

a) Formulating a study question

According to Yin (1994, p.21), if a researcher formulates the research questions that seek 'why' and 'how' related answers, a case study approach is most helpful and appropriate. Based on the aims of the research, this study sought answers to the specific questions of 'what' and 'how' a self-evaluation and development framework would improve quality of a pre-school. Hence, a case study approach was considered.

b) Formulating propositions

A second key feature of a case study is the study propositions. Yin (1994, p.21) believes that a proposition would help the researcher to initially

direct the research. Through a proposition, the scope of data collection and analysis could be closely framed and it may be modified as the study is progressing. For this study, the intent was to explore and to inquire. It was therefore hard to formulate a proposition when an intervention strategy was centred with an existing dynamic process and not a static situation. There would be some consequences that could be anticipated and there would be far more situations in each centre that were unlikely to be anticipated. Consequently, for this study, there was no proposition formulated. The preliminary research questions were used to direct and frame the study, its scope, the process of data collection and data analysis.

c) Deciding on unit/s of analysis

When deciding on the unit of analysis, Patten (1990) suggests researchers to think of ”what it is you want to be able to say something about at the end of the study” (1990, p.100). Merriam (1988) gives examples of the possible units of analysis, such as a specific instructional technique, teaching style, organization, individual student’s experience, a program, a chain of events or phases of a process. Each of these units constitutes a boundary (Merriam, 1988, p.45) that is set by me, such as rules to take in or leave out the data and samples. The boundary for this study included the context of the four phases of a self-evaluation process and the inter-relational relationships of people in the setting throughout the research.

d) Data analysis strategies

As described by Yin, the fourth component is “the logic linking the data to the propositions” and the fifth one is “criteria for interpreting the findings” (1994 p.106). One of the data analysis strategies recommended by Yin (1994, pp.106-110) is ’pattern-matching’. Based on an empirically-based pattern, the researcher could check the findings and look for emerging patterns to establish if the findings support or reject the empirically-based

pattern. For this case study, there were some empirically-based findings related to quality learning and quality teaching reported in the work done by Laevers (2005, 1998, 1994) and Pascal and Bertram (1999a, 1997a, 1997b). In Chapters V and VI, there is an attempt to match the findings of this study with the empirical findings from the previous studies by some researchers, such as Laevers and Pascal.

4.3.3 Factors Considered Adopting Case Studies Approach

For this study, using a case study approach allowed me to focus on the process and the context, aiming to discover the feasibility and effectiveness of employing a self-assessment and developmental framework for quality improvement of pre-schools. To be more specific, the decision to adopt a case study approach depended on the following three factors:

First, was about the nature of the research questions. Yin (2003) suggested that a case study would be appropriate if the research focus aimed to answer the 'how' and 'why' questions and investigate a social phenomenon in a natural setting without introducing any changes or controlling the setting.

Second, was the extent of control that the researcher had on the study. Like any other qualitative methods, a case study approach allows the focus of this study to emerge or change when there is a need for it. Flexibility is an advantage while adopting a case study approach. Yin (1984, p.19) noted the unique strength of a case study was "its ability to deal with a full variety of evidence – documents, artifacts, interviews, and observations".

Third, was consideration from a practical aspect as Pascal and Bertram (1997a, 1997b, 1994) reported that the EEL model was an effective strategy to raise quality in many early learning settings in UK. They (Pascal & Bertram, 1997a, 1997b) noted that the case studies approach allowed the EEL

research team to explore areas of collaborative partnership among stakeholders. Each case was an example of a developmental planning outcome in various aspects of the field of early learning. Case studies provided the EEL team with an in-depth experience of an improvement process, allowing them to understand how to empower those who undertook it, including the leaders needed to effect changes in various settings. Learning about their experiences from the literature (Pascal & Bertram, 1997a, 1997b, 1993; Ramsden, 1997), I believed that the EEL model, using a case study approach, might work well in the Singapore context to help pre-schools to improve their programme quality. Hence, I adopted a case study approach for this study.

4.3.4 Criteria for Judging the Quality of Research Design

One common criticism of a qualitative inquiry, such as case study, is the credibility of the research design. Yin (2003, p.13) highlights that in a case study, investigation should focus on contextual conditions that might influence the phenomenon of the problem being studied. He stresses that because the phenomenon and its context cannot be easily separated, different data collection techniques are required to account for contextual influences. For example, observations, interviews, documents, photographs, artifacts and different forms of media representation are multiple sources of evidence that can be used to counter check the facts and information. Triangulation is another strategy that can cross check a fact from various sources. These are strategies and techniques that can be used to increase the validity and reliability of the findings (Yin, 1984, p.25).

Stake (1995) recognised the 'faults' claimed by others, such as "qualitative inquiry is subjective" (p.45) and the various ways to validate observations, such as "triangulation" (p.107). He elaborated more on the importance of interpretive powers of researchers. Erickson (cited in Stake, 1995, p.8) states

that “the most distinctive characteristic of qualitative inquiry is its emphasis on interpretation”. Stake considered interpretation from a broader perspective. He noted that when collecting data, participant observers are interpreters of the happenings in the setting, including interpreters observing and recording objectively what is happening in the field. It also refers to interpreters examining closely the meaning of the phenomenon, such as reading the verbal and non-verbal cues of the people and situation at the focus group discussions.

For this study, various techniques recommended by Yin (1984) were used to help increase the credibility of the study. Yin (1994, p. 33) suggested researchers to carry out four types of tests that are common to all social science methods in order to claim the quality of the study. They are, construct validity, internal validity, external validity and reliability.

4.3.4.1 Construct validity

Yin (1994, p.34) commented that some qualitative research studies failed to “develop a sufficiently operational set of measures … [and] that subjective judgments are used to collect data”. He noted that some studies on ‘change’ did not clearly define what constituted ‘change’ and what were good indicators showing ‘change’ taking place. Yin suggested three tactics to increase construct validity. The first tactic is to use multiple sources of evidence during the data collection stage. Next, is to establish “a chain of evidence”. The third tactic is to get research participants to review the draft case study report. In this study, construct validity was carefully thought through. The concept of quality for improvement was clarified and elaborated in Chapter II. Three measuring tools, the Child Involvement Scale, the Adult Engagement Scale and the Early Childhood Environmental Rating Scale were reviewed and found to be well-validated tools that adequately described the concept of quality. With the input and comment from the teachers at the

pilot stage, these tools were deemed to be appropriate as the concepts and procedures on the use of these tools were easily understood by teacher observers.

4.3.4.2 Internal validity

Yin (1994, p.35) noted the difficulty in achieving internal validity. He suggested that some researchers failed to make appropriate inferences and did not establish appropriate casual relationships of events occurring in a case. To avoid making inappropriate inferences, in this study, I recognised that an extensive literature review of the main research themes could avoid making unnecessary inferences. In addition, professional guidance and advice from the skilful and experienced researchers, such as academic supervisors, critical friends and other professionals in the early childhood field had helped improve the internal validity of the study.

4.3.4.3 External validity

Yin (1994) noted the critics of case studies advised it to be a ”poor basis for generalizing” (p.36). He stated that if the intent of the researcher was “to strive to generalise a particular set of results to some broader theory”, effort should be made while selecting the case for the study. Yin (1994, p.36) further added that this “replication logic” is the same that underlies the use of experiments in quantitative research. This study was also about generalizing the findings if the investigation was found to be applicable to a wider context.

4.3.4.4 Reliability

Reliability refers to the same protocol of a case study, yielding the same outcomes if used in another case study. Yin (1994, p.37) highlighted the importance of having a set of protocol to deal with documentation of

various processes and steps being carried out during a case study. He used the metaphor of an auditor checking the account to illustrate that good documentation and a clear protocol of the entire process of conducting a case study would allow another auditor to follow the steps so as to obtain the same findings. For this study, the tools used, the protocol, procedures, each stage and every step in the entire research journey are described in details in this thesis.

4.3.5 Strategies used to Increase Credibility of this Study

With input from the literature review and experiences gained from the piloting phase, issues of validity and reliability in this qualitative case study research was considered and some strategies such as triangulation, member checks and multiple observations that were mentioned by Merriam (1988), Patton (1990), Stake (2006) and Yin (1994) were built into the main study for dealing with validity and reliability related issues. These strategies are briefly described in the following sections.

4.3.5.1 Triangulation

This study used “triangulation”, a commonly used strategy of qualitative research to strengthen the findings. “Triangulation” (McMurray, Pace & Scott, 2007) refers to cross checking the facts from various sources to help the study. In this study, multiple data sources were used, such as observation records, focus group discussion, documentation review and questionnaires. Investigator triangulation was also adopted, for example, in each class, besides teachers as observers, the principal and myself, also randomly observed 30 percent of the children who were the target children observed by their teachers.

4.3.5.2 Member checks

At the point of data entry, I went back to individual teacher observers to check the interpretations of the data. At the end of the evaluation phase in the first year of the study, I collated the data and established the preliminary findings pertaining to the specific centres. These sets of preliminary findings were converted to charts and tables and they were shared with the centres individually, to ensure that the trend the data reflected was the actual situation in the specific centres. These member checks, a tactic of taking data and interpretations back to the people from whom they were derived, was one of the ways to ensure the credibility of the results of this study.

4.3.5.3 Multiple observations

In this study, each child was observed at least three times in different settings by the class teacher with reference to child involvement levels. Besides observation by the teacher observers, the principal and I also randomly observed 30 percent of these children who were observed by their class teachers. This study adopted this method of repeated observations of the same phenomenon in gathering data over a period of time so as to help increase the validity of the findings.

4.3.5.4 Peer review

In this study, peer principals from other selected pre-schools and one experienced early childhood educator were engaged as external valuators. After each individual centre evaluated their own centre using the ECERS tool, the assessment scores were reviewed and deliberated item by item by these

external assessors. Inter-rater scorings were compared and inter-rater reliability was checked. This process strengthened the reliability of the scorings assigned to the environmental settings of these selected pre-schools. Inter-reliability was found to be 89 percent and this is considered sound (Bell, 2007).

4.3.5.5 Case log

Capturing the sequential events and key processes, brief notes of happenings in chronological order, namely a case log, enabled me to trace back the context and the development more accurately. This case log included a brief note of dates of meeting specific people, the content of training, the participants' feedback, discussion, issues and problems being discussed in formal and informal settings.

In brief, using multiple methods of data collection, multiple sources of evidence, triangulation, member checks and inter-rater checks were the strategies used to strengthen the credibility of the findings in this study.

4.4 PILOTING PHASE

Data collection via observation was fundamental to this research study. As stated in Chapter III, three quantitative research instruments were used, namely the Child Involvement Scale (CIS), the Adult Engagement Scale (AES) and Early Childhood Environmental Rating Scale (ECERS-R). Through observation, these tools measured and assessed various aspects of the quality of the pre-schools selected for this study. Merriam (1988, p.88) advocated that observation could serve a formulated research purpose well if the observations were "deliberately planned … [and systematically recorded and subjected to checks for the purpose of validity and reliability". When

responding to some critics that participant observation as a data-gathering technique could be too subjective and therefore unreliable, she argued that it is possible to “record behavior as it is happening”. She stated that the main concern was on the questions of when was the appropriate time for observation, how the behaviour was interpreted and recorded. She emphasized the need for training to be a skilled observer. Patton (1990) also proposed that training of observers should include topics on ”how to write descriptively; practicing the disciplined recording of fields notes; knowing how to separate details from trivia… and using rigorous methods to validate observations” (1990, p.123).

4.4.1 Reasons for Planning a Pilot Phase

Before the main study, I, as the researcher, planned and implemented a piloting phase. This included establishing the protocol, trialing the instruments, so as to understand the concepts of quality at the operational level. Specifically, I wanted to find out whether the instruments:

a) were culturally appropriate for the Singapore context;
b) would yield data which could answer the research questions;
c) were easy to use in terms of format and content requirements;
d) permitted the signals of child involvement and adult engagement to be easily observed and detected by observers;
e) allowed the decision for scoring the child involvement level and adult engagement level to be easily made by observers; and
f) would cause sticky issues and serious concerns that would impact on the main study, such as conducting observations, interviews and focus group discussion, collecting documents and arranging training and coaching schedules.

4.4.1.1 Use of tools

In 2002, I attended a two week training course offered by the Frank Porter Graham Child Development Centre of the University of North Carolina–Chapel Hill. The workshop and hands-on sessions provided me with an in-depth understanding of what constituted quality and the procedure in using ECERS-R to assess quality of an early learning centre.

The key developer of the tool - the Leuven Involvement Scale for Young Children, LIS-YC, Professor Laevers from Belgium was contacted in 2005 through emails and the LIS-YC (Laevers, 1994) Manual with a training package was purchased for the study. I attended two workshops and a conference presentation by Professor Laevers in Adelaide, South Australia in June 2005. These opportunities allowed me to develop a sound understanding of the concept of child involvement and the use of the tool, LIS-YC.

Similarly, I obtained the training manual and package on the Adult Engagement Scale (AES) that had been adopted by the Effective Early Learning project in UK (Pascal & Bertram, 2005). I enrolled in the training workshops conducted by the Centre for Research in Early Childhood of the University of Worcester in England in May-June 2005. In order to know how the tool was used in a setting, I was attached to an early learning centre in England for two weeks as the centre was one of the EEL project centres using the Adult Engagement Scale in 2005. Through reviewing literature, training and work attachment, I gained a deeper understanding of the concepts and the procedures on the use of these instruments.

Both the LIS-YC and Adult Engagement Scale (AES) are a 5-point scale instruments. LIS-YC measures the processes of learning by looking at a child's actions and behaviours, such as "concentration" and "acial expression". How an observer assigns a score to a target child depends on the number of signals the observer has noted (Re: Appendices H-J). Adult Engagement Scale, on the

other hand, identifies three attributes of quality teaching: sensitivity, stimulation and autonomy. For each attribute, five to seven descriptors of engaging and non-engaging qualities are listed to help the assessor focus on the signs of engagement qualities, such as bodily posture and voice quality to judge level of sensitivity of a teacher (Re: Appendices K-L). The concept and instruction on the use of the Scales has been discussed in details in Chapter III.

4.4.1.2 Setting

This trialing of the tools took place in two pre-schools in Singapore. These pre-schools served children aged three to six, attending nursery, Kindergarten 1 (K1) and Kindergarten 2 (K2) classes. Centre A had 180 students and 6 teachers and Centre B had 250 children and 8 teaching staff and teacher aides. They operated two sessions, morning from 8.30 am to 12 noon and afternoon from 1.30pm to 5pm. These centres adopted a more integrated approach to planning lessons and activities for children. A typical daily timetable included circle time, worksheet hours and free choice activity time. During the circle time, 'big book sharing', 'show and tell' or formal instruction was common. During the 'worksheet hours', children were grouped and rotated to sit around tables to complete their school work. Children who completed their worksheets could choose to visit various activity corners. These included the home corner, table toys corner, block corner, arts and crafts corner and library and reading corner. Colored tags were used to control the numbers of children in each of these corners. A 'snack break' was also provided in between activities.

4.4.1.3 Target Group

In Centre A, twenty two children from two K1 classes were involved in the trial use of the LIS-YC tool. Twelve of them were boys and ten were girls. The majority of them were Chinese with two Malays, one Indian and one Sikh. The

class teacher was a 'diploma trainee' who was keen to improve her teaching practice. The principal had attained diploma leadership qualifications and was attending a degree course on early childhood education at the trial period.

In Centre B, the principal and 6 teachers were involved in the use of Adult Engagement Scale. Among the 6 teachers, one was diploma trained, four were certificate-trained teachers and one was undergoing a certificate training course. The attrition rate of teachers in this centre was low. The principal had attained the Diploma in Teaching and was in the course of completing her Leadership training course during the trial period.

4.4.1.4 Procedure

Once the University Ethics Protocols were approved, I approached the two pre-school principals. Through them, the respective Management Advisory Boards agreed to allow the trialing at their centres. Subsequently, one staff meeting was used for me to share the ideas and details about the theoretical underpinning of the concepts and the use of these tools.

Within the two-week trial period in Centre A, 66 observation sessions were carried out, including observing children who were in different learning settings. During the trial period, I set aside time to discuss the use of the tool with the teachers and principal involved. This enabled me to find out more about their difficulties, concerns and issues encountered by the staff while using the tools.

During the two-week trial period in Centre B, 38 observation sessions on teacher interaction with children were carried out. Each day, the principal and I visited two classrooms and observed two teachers. This allowed a fruitful sharing at the follow-up discussion. Ideas were exchanged, concepts were clarified, scorings were shared and justification of the scoring was elaborated.

The experience gained from this exercise was of paramount importance to the research procedure.

Data were collected through direct observation of children or adult teachers performing tasks. An aggregate score was computed for child Involvement levels as well as adult engagement levels. This allowed me to have a sense of what a class profile of child involvement looked like and how a centre profile of adult engagement was presented. A further analysis of child involvement was made to identify the child involvement profile by the gender, age, learning setting and learning activities. Similarly, a breakdown of adult engagement levels by the different attributes of sensitivity, stimulation and autonomy, was also computed. Data entry assistants were engaged to transfer the written observation sheets from the participant observers into Excel files. I designed a simple code book for the data entry work and checked the entry details before data were computed for analysis.

4.4.2 Learning Points

These observation sessions provided opportunities for me to observe how children learnt in different settings and how teachers facilitated learning with different class groups. The experience of this trial and the learning points helped shape the research design for the main study.

4.4.2.1 Ease of use

On the use of the LIC-YC, the teacher observers encountered difficulties in completing the observation sheet in general. An initial concern was that at the point of observation, how they could remember all the signals of child behaviour indicating quality learning. They found that referring to the list of signals at the initial stage was quite cumbersome. After the first day of practice, the teachers

were able to take a holistic approach to assign a child involvement score to the target child. They looked for the nine signals of child involvement behaviour and made an assessment of the involvement level on the target child (Re: Appendix I).

4.4.2.2 Evidence

Initially, the teacher observers expressed concern that they were, at times, distracted and confused by other insignificant traits and characteristics occurring at the point of observation. This, however, was also a problem after an initial period of time as human behaviour is complex, hence some important traits and characteristics are difficult to observe directly. Observers have to differentiate between the significant and insignificant aspects of the signals. This relies very much on how individual observers interpret the signals of child involvement. An example was described by a teacher using the LIS-YC as follows:

> *A girl used Dublo pieces to form a tube-like structure and walked around the room. She told me that 'this is a vacuum cleaner'. A minute later, she told her friend 'I am taking a dog for a walk'.*

These signals of behaviour and language expression shown by this particular child were good indicators of 'creativity and complexity'. The teacher was able to understand these signals in precise operational terms and make statements that described the signals and level of involvement.

Some teachers expressed that during their observation, they also played the role of a facilitator and discipline mistress. At times they were distracted by other children who approached them for assistance. Due to distraction, observation and recording might have to be done at a later hour.

In Centre B, using AES, the principal and I went together to the same classroom to observe teachers facilitating child learning. The principal

expressed concern that as an “assessor–cum-observer”, she had to be aware of the complete observations. At the discussion following with the principal, I noted that the reflective effect of the principal observer could be a threat to the reliability of the observation process. Merriam (1988) warned of personal biases and how they may influence the investigation because “the primary instrument in qualitative case study research is human, all observations and analyses are filtered through one’s worldview, one’s values, one’s perspective” (1988, p.39).

4.4.2.3 Scoring

The LIC-YC and the AES instruments are rating scales that require the observers to establish positions by assigning a grade of either level of involvement to every individual target child or level of engagement to every individual target teacher. The teachers in the pilot centres expressed their concern that assigning an appropriate score was not an easy task. The following is a description of a scenario observed and described by a teacher observer. It is an example to show how she recognised the characteristics of child involvement based on the nine signals given and how she rated the target child with a score.

> *I saw Rahmat staying alone at the Table Toys corner where toy dinosaurs and a plate of sand and eggs (colourful gravels) were available. He starred at the plate of ‘fossil eggs’ and picked up a few gravels from the plate. He looked pale and lacked energy. He turned back to the box of toy dinosaurs and picked up a T-Rex. He immediately stood up and moved the dinosaur along the edge of a chair next to the table. His body moved in tandem with the contour of the chair, up and down, making animal’s noise [imagining himself as a dinasour]. He next chose a brontosaurus and next a triceratop to fight with the T-Rex. When a friend came to the table, he starred at him for a little while. When his peer held up a brontosaurus, he swiftly shouted ‘My T-Rex (is) more powerful.*

At the follow-up discussion with other teachers during lunch hours, this teacher observer shared her vivid description and justified her scoring. She rated the

target child at Level 4.5 of the child involvement scale. She noticed almost all signals of behaviour described in the Scale, for example, concentration, energy, creativity, facial expression, precision, reacting time, language and satisfaction. The only undesirable behaviour she quoted as evidence for less than perfect score of Level 5 was the 'low energy' at the initial moments. All members at the discussion agreed with her assessment as she was aware of the totality of what was observed.

According to Merriam (1988), each participant's observation experience has its own rhythm and flow (p.89). Every observer has "his or her own technique for remembering and recording the specifics of an observation" (p.97). At the pilot centre, I also noticed that some teacher raters unconsciously tended to see what they expected to see and overlooked those incidents that did not fit their understanding. Their own values, feelings and attitudes, based on past knowledge of a child, could have distorted their grading of the child involvement level. This reflective effect of the observer could affect the reliability of the observation process. This finding became an important input for the subsequent training workshops conducted for the selected pre-schools in the main study.

4.4.2.4 Data collation and analysis

During the trial, 66 child observation records and 38 teacher observation records were collected. The challenge of conducting observations was to collate and to make sense of the massive amount of data. This included encoding, collating and organsing data before the data were being analysed. The piloting experience in data collation gave me an opportunity to learn about potential problems, as these problems and issues would likely be encountered at the main study. Data entry had to be done as soon as the observation records were collected because any doubts and clarifications with the observation scoring and records could be verified with the individual observers. Any delay in time would likely create errors as a result of faulty memory of the observer.

Before data entry, I had to consider establishing a clear coding and categorisation scheme for tabulation of the data. The issues of increasing the validity and reliability of the data and findings were seriously being considered. Different strategies, such as triangulation, different data sources, different data collectors, and/or different procedures of data collection were some of the possible techniques that were considered to be built into the research design for the main study.

4.5 MAIN STUDY PHASE

Modelling the Effective Early Learning project, the selected pre-schools would take approximately eighteen months to complete a four-stage cycle of evaluation, action planning, improvement and reflection with a clear and systematic procedure as follows:

4.5.1 Four Phases of the Evaluation Cycle

a) Phase One: Evaluation (July – September 2005):

The selected pre-schools first requested their teachers to use the Leuven Involvement Scale for Young Children (LIS-YC) to assess child involvement levels of 50 percent of their class children. The principal and I used the Adult Engagement Scale (AES) to assess the quality of adult engagement for all teachers. To obtain the background information of the pre-schools, at this stage, I also collected documents, such as parent handbooks, newsletters and child progress record book from these pre-schools. Regular meetings and discussions were conducted with the principals and teachers individually or in groups. Through meetings, mentoring sessions and document checks, I had obtained the data on the contextual conditions of the individual pre-

school. For the purpose of inter-reliability checks, the principals of other selected pre-schools were invited and acted as external assessors to validate the self-assessment scoring of the environmental quality of each pre-school. A professional from the early childhood field was also engaged to use the AES to assess the quality of teacher interaction with children in these pre-schools.

b) Phase Two: Action Planning (October - November 2005):

I collected the observation data of child involvement and adult engagement from the teachers and principals in the pre-schools under study. The collation of data was summarized in charts and tables, such as the general profile of child involvement and the general profile of adult engagement in the specific pre-school. With these preliminary findings, the individual principals then led their staff to analyse and identify good practices and areas that needed improvement at their end of the year review sessions. Action plans were formulated at the end of this stage.

c) Phase Three: Implementation (December 2005 – October 2006):

At this phase, individual pre-schools implemented their action plans. During this period of almost a year, individual pre-school set their own targets and objectives for the year. They then implemented different strategies and programmes to improve different aspects of their pre-schools, such as physical environment, pedagogy, learning activities and modes of child assessment. It was at this phase that the teachers collected the second round of the child involvement data so as to find out if there would be any positive outcomes of their effort. Similarly, at this phase, the principals and I also collected the second round of adult engagement data by arranging schedules to observe the teachers using the Adult Engagement Scale. These observation schedules were conducted between July and October of 2006 in the selected pre-schools.

d) Phase Four: Reflection (November 2006 – January 2007):

The data on child involvement and adult engagement collected at Phase One and Phase Three were analysed and comparisons were made. The child involvement and adult engagement were identified as two process variables that provided good indicators of quality. Hence, the comparison of the profiles of child involvement and adult engagement before and after implementing the self-evaluation and development framework allowed the trend patterns to emerge. This helped the pre-schools to objectively establish the facts of improvement or no improvement. At the reflection stage, the findings also enabled the pre-school to identify the contributing or limiting factors that resulted in such outcomes.

4.5.2 Specific Objectives of the Research Design

The specific objectives of this study stemmed from an overall aim which was to explore a self-evaluation and development framework as a means for quality improvement of pre-schools and for professional growth of teachers and principals. The specific objectives of the research design were to:

a) collect data and describe the general profile of each setting with reference to its teacher composition, pupil background,
b) describe and document the quality of the setting to obtain a quality profile of the setting with an aid of the ECERS-R;
c) describe and document the quality of child learning in the setting before and after implementing the framework with an aid of the LIS-YC;
d) describe and document the quality of teacher interactions with students in the setting before and after implementing the framework with an aid of the AES;

e) describe and document the reflective practices and professional development of teachers and principals during the four phases of the 'self-evaluation process;
f) describe, document and elicit the contributing or limiting factors that enhance teachers' capabilities and skills as a result of implementing the framework;
g) describe, document and elicit the contributing or limiting factors that enhance principals' leadership qualities as a result of implementing the framework; and
h) describe, document and elicit the change, if any, in the organization culture as a result of implementing the framework.

4.5.3 Sampling Cases for the Study

It was necessary to adopt an appropriate sampling method to select cases for the study. Important considerations included how many kindergartens to investigate and how these were to be selected. Yin (1994, p.45) classified a case study of the same subject occurring at different sites, as a multiple-case design. Data from multiple sites on the same subject is more compelling and can satisfy the research requirements that data from a single site are unable to do. Stake (2006) pointed out that multiple cases would make a study 'more productive of generalizations or more descriptive of current operations' (2006, p.v). The drawback however is that the scope of the multiple-case design requires extensive resources and time.

As of April 2005, the website of the Education Ministry showed that there were 501 registered kindergartens, including community-based organizations, namely the PAP Community Foundation (PCF) that operated 289 centres located in all the public housing estates in Singapore. The remaining 212 kindergartens were religious-affiliated, society-linked or private commercial

institutions. As described in Section 1.2.3.1, Chapter I, in Singapore, self-assessment by kindergartens is a voluntary exercise.

Purposeful sampling was adopted in the present study. Chien (cited in Merriam, 1988, p.48) noted that purposeful sampling is based on 'the assumption that one wants to discover, understand, gain insight; therefore one needs to select a sample from which one can learn the most'. To obtain a more typical-case sample for valid analysis, 10 kindergartens were invited to participate in the study in 2005. The selection criteria were proposed as follows:

a) The kindergartens must be community based;
b) They must be located in different geographical areas;
c) They must have class groups of children from Kindergarten One and Two levels;
d) They must enroll children from different gender, ethnic and socio-economic groups;
e) The principals must have acquired minimal professional qualifications.

The initial proposal was to involve approximately 60 to 70 teachers and 500 children from the selected pre-schools. The study intentionally excluded the profit-making, commercial-type of kindergartens. This was done because these profit-making kindergartens catered for a small clientele. They were unlike the community-based kindergartens that were more accessible to children in Singapore and were distributed widely in all housing estates and charged fees that were more affordable (Table 5.1).

To gather initial information for sampling purpose, I contacted the headquarters of the PAP Community Foundation (PCF) Education Centres in April 2005. The Education officers who were in-charge of the pre-school

sector were also informally consulted in order to come up with a list of 13 or more 'typical-type' pre-schools for the study. Following that, the principals of each of these pre-schools were contacted for a meeting. At the meetings, the research purpose and focus, the centres' expected commitment and the tentative research timeline were shared with the principals. Through the principals, the boards' approval was obtained. Subsequent meetings were arranged to meet with all teachers to obtain their approval to participate. With the teachers' agreement to the study, an official letter was then sent to the respective management boards and the principals to obtain an official permission for their centre's participation in the study.

With different reasons, three pre-schools were unable to participate in the study. In the first year of the main study, ten kindergartens were involved. In the second year, two centres dropped off from the list with change of leadership and implementation of an intervention programme. Consequently, eight pre-schools with a total about 800 pupils and 80 teachers were involved in this study.

I also prepared an information sheet describing the study and the requirements for children participants. This sheet was issued to all parents of the student participants (Re: Appendix C). It included the purpose of the study, requirements, timeline and the assurance that confidentiality of the individuals' data would be preserved. This information sheet was accompanied by a consent form (Appendix F) that required the parents to sign indicating their approval of their child participating in the study. Similar forms were issued to the principals and the teachers in these selected pre-schools (Re: Appendices A, B, D, E). To ensure confidentiality, all people assisted in the study such as helping with observation, data entry and collation were also required to fill the confidentiality form.

It was also made clear to the participants that they could withdraw from the study at anytime. The personal information of the centres was kept confidential throughout the course of the study. University ethical guidelines were adhered to. At the end of the study, the participating centres or individuals could request a copy of the study report.

The participating pre-schools and participants were each assigned a code number for the purpose of data collation and subsequent analysis. Data management and analysis were done using database computer programmes, Microsoft Excel, Access and SPSS. These programmes helped produce tables, charts and diagrams that showed useful trends and patterns of the findings.

4.5.4 Pre-School Training on the Procedure and Use of the Tools

4.5.4.1 Use of Leuven involvement scale for young children (LIS-YC)

As described in Section 3.3, Chapter III, the children's levels of involvement were assessed using the Leuven Involvement Scale for Young Children (LIS-YC). According to the Manual (Laevers, 1994), the number of children to be observed in each class group is a minimum of 12 children assuming a maximum class of 25 children. Each observation of a target child lasted for 2 to 3 minutes. Each target child is observed three times at different settings using the LIS-YC form (Re: Appendix H). For each observation, the focus was on the child's behaviours, his/her activities and interactions with others. A full description of how the nine signals of involvement were operationlised is provided in Appendices I-J.

In this study, participating teachers and principals were the observers of child involvement. Prior to the study, at each pre-school, I conducted a training workshop of four hours on the use of the LIS-YC. A total of 91 teachers and

12 principals and administrators attended these workshops in 2005. At these workshops, the concept of child involvement was introduced to the teacher participants. A training videotape (Laevers, 1994b) was used. It came with the instruction, manual and model answers of the accompanying video clips. The participants were guided to assess the involvement levels of children in childcare settings using the 27 video vignettes. The first 20 vignettes were used to guide teachers in assessing involvement levels by recognizing the signals of learning of the target child holistically. The last 7 video vignettes were used to test and check the reliability of the scoring from different assessors. At these training sessions, all teacher participants were requested independently to rate the target child from the 7 vignettes. Their inter-rater reliability scores were 89 percent for the Involvement Scale.

After the training, for each pre-school, one week was given to all teachers to practice observation by using the Scale and the form. The researcher visited all centres to serve as a mentor and to help clarify any doubts that the teachers had. To increase the opportunities for data collection and reliability checks, the principal and I also observed in each class 30 percent of the number of the target children observed by their teachers. In other words, 30 percent to 60 percent of the target children in a class had more than 3 observation records to establish their mean scores.

4.5.4.2 Use of adult engagement scale (AES)

The Adult Engagement Scale is a 5-point scale rating (Re: Appendix K) according to the facilitative qualities that the adult demonstrates and which are supportive of children's learning. It measures, by observation, three elements of adult behaviour when the adult interacts with children in the context of learning. These elements are sensitivity, stimulation and autonomy. Teacher-child interaction is pivotal in the learning process. The underlying

conceptual basis of these three attributes of quality interaction is elaborated in Section 3.4, Chapter III.

According to the Handbook (Bertram and Pascal, 2004), all teachers in an early learning setting need to be observed 5 times at different settings on separate days. Each observation lasts for 2 to 3 minutes. The scoring of the three attributes of interaction, i.e. sensitivity, stimulation and autonomy is recorded separately on the adult engagement observation sheet (Re: Appendix L). In this study, the principal of the centre, an external pre-school professional and I were involved in observing all participating teachers in each pre-school. This means that all teachers were observed a minimum of 5 times by the principal and me or the external assessor. At the data analysis stage, a mean score of adult engagement was computed for individual teachers to form the basis to calculate a mean engagement score for a setting for each of the three elements of engagement.

Centre-based training was given to all participating teachers and principals using a videotape (Bertram & Pascal, 2004) with vignettes of adults interacting with children at child care settings. At the workshops, a similar testing element to the adult engagement scoring exercise was done to check the inter-rating differences among the raters. As the teacher participants were the ones to be observed in the main study, there were questions raised while rating the target adults shown in the video vignettes. Some teachers opined that the video vignettes were culturally biased. Other teachers were concerned about the adult engagement observation sessions becoming a session of staff appraisal. The participating principals in the workshops re-assured their teachers that the intent of participating in this study was to seek for effective strategies to improve their pre-schools. I also re-assured the teacher participants that the observation records would not be disclosed to anyone else other than the principal assessors and me. The data was collated as a mean score of a setting to obtain a profile of quality of teacher interaction in a centre. Individual mean scoring was not presented.

After the training, I arranged with individual principals to practice using the tool. Three teachers in each pre-school were observed using the AES form. The scorings between the two assessors were compared. This process was carried out to check the degree of agreement or disagreement between the assessors. The iterative process was useful for the raters as many examples and observable evidence were cited and clarified. Consequently, a consensus was reached for every assessment.

4.5.4.3 Use of early childhood environmental rating scale (ECERS-R)

In this study, the Early Childhood Environmental Rating Scale was used only once to obtain a baseline assessment of the quality status of the selected pre-schools. Two reasons were considered for not using ECERS-R to re-assess the setting in the second year. Firstly, the assessment data of child involvement and adult engagement would provide sufficient evidence to show improvement, if any, after implementing a self-assessment framework. Secondly, many items among the 43 items of ECERS-R required time and considerable effort for centres to make changes and improvement. The outcomes of these changes and improvement if any, would unlikely be seen in 10 months time during the second year of the study. Any repeated use of ECERS in the second year, would not likely result in much difference in the scorings for the assessment outcomes.

ECERS-R is a 7-point scale rating tool that comprises 43 elements of quality under seven subscales (Re: Appendix P). It is an observation schedule designed to assess early learning settings. After consultation with the practitioners, items 5 and 11 were removed. Item 5, ‘space for privacy’ was not considered as a requirement, but a luxury within the local context as space is a constraint to many pre-schools in Singapore. Item 11, ‘nap/rest’ was also taken away as napping is not included for a 3-4 hour daily

programme in a kindergarten setting. In total, 41 items in the seven subscales of ECERS were used to assess the quality setting of the selected pre-schools.

As mentioned in Section 2.3.2.1, Chapter II, most teachers and principals in Singapore are familiar with ECERS-R. Among the participating pre-schools, five out of the eight pre-school principals attended the ECERS awareness workshops conducted by Professor Thelma Harms in previous years and other principals and trained teachers learnt about the ECERS-R tool at their pre-service teacher training courses. However, none of the participants ever used the tool before.

4.5.5 Qualitative Data Source

It was through these various phases of the evaluation cycle that I collected a large amount of qualitative information and evidence to ascertain in what ways, if any, would a self-evaluation and development model effect change and enhance the capacity of the organisation. To answer the secondary research questions, I relied on a range of sources to explore the inter-relational relationships of people in a changing process within context.

This quatitative data included different artifacts and documents. I collected handbooks for parents, mission and vision statements, child's progress report booklets, sample child's portfolio, curriculum related materials, resource books used by teachers, sample reflection logs, yearly action plans, sample activity sheets, class time tables, sample communication booklets with parents, sample newsletters and brochures issued to parents and customers, information and photographs of the events and activities, and publicity materials on displays.

Besides these documents, at the beginning of the study, two questionnaires were issued to the principals and the teachers. One questionnaire (Re: Appendix M) was to elicit the perceptions and views of the principals on the ten dimensions of quality recommended for the Effective Early Learning project (Bertram & Pascal, 2004, pp.7-11). One questionnaire (Re: Appendix N) was to capture the teacher participants' personal and professional training related information.At the end of the study, 5 teachers in each centre were invited to submit their reflection logs with guided questions given (Re: Appendix O).

When the evaluation cycle started in different centres from July to September 2005, I visited each centre for duration of 7 to 14 days to carry out the observation of child involvement and adult engagement. During these periods, I observed the happenings at the centre, such as attending weekly level teacher meetings, centre staff meetings, assembly and departing moments, indoor and outdoor activities, snack time and hand washing time, transition between periods and sessions. I also attended some functions organized for children or parents, such as the graduation ceremonies and the open house, field trips to a departmental store and to a beach. There were ample brief notes taken at the site visits, formal and informal meetings with the principals, teachers and the sharing sessions. These formed part of the qualitative data that were used to synthesise the situations and happenings within the context of this study. Case reports were compiled with a special emphasis on quality improvement within the context of the evaluation cycle.

In the first year, data were collected from ten selected pre-schools. In the second year of the study, the data from two centres were withdrawn. One was due to re-organisation and the other one was implementing another initiative at the time of study. Hence the data were collated based on the returns and observations from the eight participating pre-schools.

4.5.6 Data Analysis and Interpretation

This study employed multiple sources of evidence, multiple methods of data collection and multiple means to analyse the data. I started to develop the categories and themes based on the field experiences and field notes that were being gathered after the evaluation phase. The rich and large amount of information gathered from the cases provided some tentative concepts for interpreting the meaning of the data.

This study began with the thorough identification of the problem being investigated. With this direction the data and facts were selected and interpreted. According to Merriam (1988) "the searching for order among them (the data) is guided by some prior notions or theories about the nature of the social phenomenon under study" (1988, p.59). Yin's (2003) pattern-matching logic technique was considered for analyzing the data collected in this study as the original objectives and design of this case study were inspired from the EEL framework and its project procedure. The findings and the philosophical assumptions underpinning the EEL framework were the basis of the initial research questions, research design and data collection plans of this study. Hence, Yin's pattern-matching strategy, using the findings from the EEL project as a basis to match with the findings of this study was possible. The quantitative data collected from three measuring instruments, LIS-YC, AES and ECERS, provided quantitative results that were found valuable to the findings. In addition, the qualitative and descriptive aspects of the study through observation, interviews, focus group discussion and document checking have offered this study much richer information of the complex social interaction in the setting as this interaction consisted of multiple variables that could be potentially important in understanding the phenomenon. Merriam (1988) cautioned that case studies, if not interpreted appropriately, could "oversimplify or exaggerate a situation… leading the reader to erroneous conclusions about the actual state of affairs" (1988, p.33).

Lichtman (2006) suggested various ways to conceptualise data analysis in qualitative research. In this study, Lichtman's six steps of data analysis process were adopted (2006, pp.168-170).

a) Step 1 and step 2: Initial coding and reviewing initial coding

After the first phase of the evaluation cycle, sets of quantitative data were entered in the Excel files. A code book was created to examine the quantitative data submitted to me by the participating teachers using the three measuring tools: LIS-YC, AES and ECERS-R. For example, there were code numbers assigned to an individual pre-school, individual teacher, individual child, gender, age group, learning settings and types of learning activities. For qualitative data that were collected through various other means and forms, such as questionnaires, focus group discussions, staff meetings, site visits, documents, brochures, newsletters, artifacts were read through and coded. This initial coding included comments, key words and headings given by me. With these key words and headings, the relevant quotes and descriptions were retrieved easily by using the advanced search functions built in the Microsoft workstation.

b) Step 3 and Step 4: Initial list of categories and modifying the initial list

The subsequent steps were to group the key words and sub-headings together to form categories. In this process, a few sub-headings were grouped together at a broader level as they appeared to be less concern to the participants. Some sub-headings and key words became a category as the participants repeatedly mentioned them. The purpose of going through this iterative process of broadening a concept while combining relevant sub-headings was to allow a concept to emerge.

c) Step 5 and Step 6: Revisiting categories and from categories to concepts

Before confirming the emerging concepts, Litchman (2006) suggested that the researcher revisit the categories to remove the redundant and less important categories. Eventually 6 to 7 emerging concepts were formed under each research question.

4.6 CHAPTER SUMMARY

This chapter presented information about how the research methodology was selected, planned and implemented in order to answer the research questions of the study. The design of the research was based on a mix of quantitative and qualitative research techniques to determine the quality status of the participating centres.

In this study, a case study approach was adopted to explore and discover whether there would be any improvement in child involvement and adult engagement in the participating pre-schools when a self-evaluation and development framework was used as a strategy for quality improvement.

Qualitative studies, such as this case study, would face additional challenges in demonstrating rigour compared with quantitative studies of experimental designs, in which validity and reliability of the research are accounted for at the outset (Merriam, 1998). For this case study, a pilot study and various techniques recommended by Yin (1984) were used to increase the credibility of the reseach design.

The following chapters will focus on data interpretation and present the findings of the study.

CHAPTER V
FINDINGS: ANALYSIS OF THE QUANTITATIVE DATA

5.1 INTRODUCTION

This chapter consists of four sections. The first section provides background information on the eight participating pre-schools involved in the study. This background information includes the demographic data of the sample, such as geographical locations, school fees, physical facilities, profiles of the student participants and characteristics of teacher participants.

The second section describes the methods of data organization and data analysis used in interpreting the data related to child involvement and adult engagement in this study.

The third section analyses and interprets the quantitative data of the child involvement levels in Year I (2005) and Year II (2006). This section also describes their emerging results to answer one primary research question stated in Chapter I as follows:

> *"In what ways, if any, would the adoption of a self-evaluation and development framework improve the level of child involvement in the selected pre-schools?"*

The fourth section analyses and interprets the quantitative adult engagement related data collected before implementing a self-evaluation and development framework in Year I and after the implementation of the framework in Year II. This section also describes their emerging results to answer another primary research question stated in Chapter I as follows:

> "*In what ways, if any, would the adoption of a self-evaluation and development framework improve the level of adult engagement with children in the selected pre-schools?"*

5.2 THE STUDY SETTING: DEMOGRAPHIC DATA OF THE PARTICIPATING PRE-SCHOOLS

5.2.1 Geographical Locations of the Pre-Schools and School Fees

In Singapore, most people live in public housing estates developed by the Singapore Housing Development Board (HDB). In a newly developed estate, there is a higher proportion of younger couples, whereas in a more mature estate, there is a higher percentage of older people and mature adults. Private residential estates are usually located at the fringe of these public housing estates or at outskirts of the city.

Based on the information from MOE (Pre-school Unit, 2009), the participating pre-schools are located in different geographical regions in Singapore (Table 5.1). They are mostly in three- to five-room housing estates. Parents prefer sending their young children to a pre-school close to their residence as not all pre-schools offer transport services. I used the monthly pre-school fees of these kindergartens listed in the website (Pre-school Unit, 2007) and types of housing in which the children in these pre-schools resided as a proxy for the children's family income status. Five out of the eight centres in 2007 charged their K2 monthly fees below the medium fees of $121. The principals verified

the findings that the children in their centres were mainly from the middle, middle-lower and lower income families.

Table 5.1: Geographical Regions and School Fees, January, 2007

Centre	Geographical region	Main housing types within a radius of approximately 5 kilometers	*K2 fees (monthly)
A	Central	HDB 3- to 4- rooms flats	$96
B	Central	HDB 3- to 4-rooms flats	$96
C	East	HDB 3- to 5-rooms flats	$95
D	East	HDB 3- to 5- rooms flats	$95
E	East	HDB 4- to 5-rooms flats and private houses (apartments/ landed houses)	$350
F	West	HDB 3- to 5-rooms flats	$150
G	West	HDB 3- to 5-rooms flats	$160
H	North	HDB 4- to 5-rooms flats and private houses (apartments/ landed houses)	$117

* 2007 Median monthly Kindergarten 2 (K2) fees of kindergartens in Singapore = $121 (range: $40 to $800).

5.2.2 Mother Tongue Languages Offered by the Pre-Schools

The types of mother tongue languages that each centre offers vary according to the ethnicity of their student population. To support the Government bi-lingual policy, all pre-schools in Singapore use English Language as the medium of instruction and offer at least one mother tongue language for their children. Table 5.2 shows the types of mother-tongue languages that these participating pre-schools offered.

Table 5.2: Mother Tongue Languages Offered by the Pre-Schools (January, 2007)

Centre	Mother Tongue languages offered
A	Chinese Language
B	Chinese Language
C	Chinese, Malay and Tamil Languages
D	Chinese and Malay Languages
E	Chinese Language
F	Chinese and Tamil Languages
G	Chinese and Tamil Languages
H	Malay Language

Parents were informed of the mother-tongue languages available at each centre at the point of registering their child or through visiting the MOE website.

5.2.3 General Facilities in the Pre-Schools

A survey form regarding the centres' facilities was distributed to all principals who responded in 2005. A summary of the survey forms (Re: Appendix M) returned by the principals (Table 5.3) shows that these pre-schools were generally well equipped with facilities and resource materials. Children each had their own storage compartment for their personal belongings.

The size of the indoor space also varied from centre to centre. In Singapore, most pre-schools have limited outdoor space. Centres A, B, C and D are located at the void decks of housing flats with smaller floor areas for activities. There was no designated outdoor play area for children. These centres made use of the void decks for children to have physical exercises. Alternatively, the children were taken to a nearby park or a common play ground for sports and games. Centres E, F, G and H are housed in a much bigger compound with outdoor space. They have indoor areas and outdoor space for the motor skills-related activities, such as ball games, water play and sand play.

To implement the MOE curriculum framework that encourages play-based learning, these pre-schools set up in each classroom an average of five to eight activity corners, such as a science investigation corner, a table-toy section, a home corner, a reading and library corner, a Lego construction area, an arts and crafts corner.

Table 5.3: Facilities in the Participating Pre-Schools (August, 2005)

Item / area	Centre	A	B	C	D	E	F	G	H
1)	Space for child's belongings	√	√	√	√	√	√	√	√
2)	Quiet area for child to rest					√			
3)	Child-size toilets	√	√	√	√	√	√	√	√
4)	Areas for displays of children's work	√	√	√	√	√	√	√	√
5)	Water play equipment	√	√	√	√	√	√	√	√
6)	Sand play area/ equipment	√	√	√	√	√	√	√	√
7)	Audio-visual equipment	√		√	√	√	√	√	√
8)	Computers for child's learning	√	√	√	√	√			
9)	Story books, library corner	√	√	√	√	√	√	√	√
10)	Musical instruments	√	√	√	√	√	√	√	√
11)	Small construction (Lego, etc)	√	√	√	√	√	√	√	√

Item / area \ Centre	A	B	C	D	E	F	G	H
12) Big construction (large blocks)					√	√	√	√
13) Science corner, e.g. thermometers	√	√	√	√	√	√	√	√
14) Home corner /Cooking	√	√	√	√	√	√	√	√
15) Miniature world, e.g. insects, etc	√		√	√	√	√	√	
16) Writing /scribbling area	√	√	√	√	√	√	√	√
17) Art /creative materials	√	√	√	√	√	√	√	√
18) Equipment for physical activities	√	√	√	√	√	√	√	√
19) Climbing frame, slide, swings					√			√
20) Outdoor field/ garden/ park	√		√		√	√	√	√

Seven of these eight pre-schools incorporated information technology (IT) related activities, such as using computers to draw, write and/or reinforce learning of the alphabet and number concepts in their weekly lessons in order to promote computer literacy.

5.2.4 Profile of the Student Participants

In Singapore, kindergartens take in children who are aged between 4 and 6. In some kindergartens, they also take in children aged below 4. For this study, only children aged 4-5 in Kindergarten 1 (K1) level and children aged above 5 in Kindergarten 2 (K2) level were involved. Children who were at nursery level and pre-nursery level below age of 4 were not included. In Year I, the records of 792 children of K1 and K2 class groups and 791 children's records in Year II were used for analysis.

Table 5.4 shows that among the 8 participating pre-schools, Centres A, B, D and F had about 100 to 150 students taking part in this study and four other centres, C, E, G and H, had 200 to 300 children involved in the study.

According to the regulatory authority, the recommended student-teacher ratio is 20 to one teacher for the K1 groups and 25 children to one teacher for the K2 groups (Pre-School Unit, 2009). The student-teacher ratio in these participating pre-schools ranged between 12 and 21 children to one teacher. The principal of Centre D reported that in 2005, its ratio was 24 children to one teacher in some K1 class groups and 26 children to a teacher in some K2 class groups. In Centre G, the centre reported that its student-teacher ratio was 23 children to one teacher in the K2 classes and 22 children to a teacher in the K1 classes.

In Singapore, the ethnicity composition of a centre is beyond the schools' control as parents enroll their child according to their preferences. Table 5.4 shows that the ethnic composition of the student participants was similar to the national composition of ethnicity (Singapore Department of Statistics, 2009) with Chinese being the majority (74.2 percent), followed by Malays (13.4 percent) and Indians (9.2 percent).

In terms of gender profile, Table 5.4 shows that there was a higher proportion of male than female students participated in this study. Over the two-year study period, there was very little change on the number of student participants by gender. The table also shows that more student participants were older children aged above 5 from K2 classes than the students aged 4-5 in K1 classes.

In Singapore, most kindergartens operate two sessions a day. In this study, there was a higher percentage of student participants who attended the morning session than the afternoon session.

Table 5.4: Background Characteristics of Student Participants

		Year I (2005)	Year II (2006)
Participating pre-school	A	7.8%	6.1%
	B	11.4%	7.6%
	C	18.7%	16.6%
	D	11.6%	8.7%
	E	16.7%	18.2%
	F	9.8%	6.7%
	G	12.0%	14.4%
	H	12.0%	21.7%
Ethnicity group	Chinese	61.2%	54.6%
	Malay	26.6%	33.4%
	Indian	7.3%	8.3%
	Others	4.8%	3.7%
Gender	Female students	46.3%	47.4%
	Male students	53.7%	52.6%
Age group	K1 (age 4 to 5)	44.9%	50.6%
	K2 (age 5 to 6)	55.1%	49.4%
Session	Morning	56.4%	54.6%
	Afternoon	43.6%	45.4%

N = 791

5.2.5 Profile of the Teacher Participants

As mentioned in Section 1.2.2.2.(c), Chapter I, the entry requirements of new teachers in pre-schools were revised and announced in 2000 by the Singapore Ministry Education. From 1 January 2008, all pre-school teachers in Singapore must acquire at least a certificate in pre-school teaching (CPT) and in every pre-school, one in four teachers must be diploma trained. In this study, the principals in all the selected pre-schools had acquired the Diplomas in teaching (DPE-T) and leadership (DPE-L). Table 5.5 shows that as at January 2007 (Pre-school Unit, MOE), two of the participating centres had met the current regulatory requirements with all of their teachers at least certificate trained and one in four teachers diploma trained. The other six participating centres had to send their untrained teachers for required training courses by January 2008.

A further revision on raising the new teacher requirements was announced in 2007. From 1 January 2009, new teachers must possess a minimum of 5 GCE 'O' level credits including a B4 grade in English Language and a minimum professional qualification of a diploma in early childhood education. As at January 2013, pre-school teachers who do not meet the new revised requirements are not allowed to teach K1 and K2 classes. As a result, many participating teachers without a diploma and a B4 grade in English Language are required to upgrade their qualifications.

Table 5.5: Principals and Teachers Meeting Policy Requirements, January, 2007

Centre	PRINCIPAL's QUALIFICATIONS	TEACHER's QUALIFICATIONS	
	Principal with both DPE-T & DPE-L and at least two years of relevant experience	All teachers are at least CPT-trained	1 in 4 teachers is Diploma-trained
A	√		√
B	√	√	√
C	√		√
D	√		
E	√		√
F	√		√
G	√	√	√
H	√		√

In August 2005, a questionnaire was given to the principals of the participating pre-schools. This questionnaire ascertained the qualifications and teaching experiences of their teachers. Table 5.6 summarises the data that were reported by the principals of these pre-schools.

In the two years of study, there was a change in the movement of teachers. Out of the 84 teacher participants in Year I, 17 left their centres and only 67 teacher participants remained in the same centres in Year II. The profile of these teacher participants is shown in Table 5.6.

Table 5.6: Background Characteristics of Teacher Participants, August, 2005

Feature		Teacher Participants	
		%	*n*
Gender			
	Female	98.5%	66
	Male	1.5%	1

Feature		Teacher Participants	
		%	*n*
Training status			
	ECE degree	9%	6
	DPE	50%	34
	CPT	19%	13
	Untrained / undergoing training	22%	14
Academic qualifications			
	Degree level	11%	8
	Diploma level	10%	7
	GCE 'A' level	5%	3
	GCE 'O' level	67%	45
	Below 'O' level	7%	4
No of GCE 'O' credits			
	≥ 8 'O'	5%	3
	7 'O'	5%	3
	6 'O'	18%	12
	5 'O'	13%	9
	4 'O'	30%	21
	3 'O'	22%	15
	≤ 2 'O'	7%	4
English Language (EL) grade at GCE 'O level			
	A1 – A2	7%	5
	B3 – B4	20%	13
	C5 – C6	53%	36
	Failed in EL	20%	13
Year of ECE experience			
	≥20 years	6%	4
	15-19 years	8%	5
	10-14 years	16%	10
	5-9 years	35%	24
	≤ 4 years	35%	24

N=67

In Singapore, pre-school teachers are predominantly female. Among the 67 teacher participants, only one participant was a male teacher.

With reference to their training status, 78 percent of them went through the pre-school teacher training courses and obtained a certificate, diploma or degree in Early Childhood Education (ECE). The remainder of 22 percent of them was either untrained or undergoing professional training as at August 2005. However, professional qualifications of these teacher participants were uneven. For example, Centre E had the highest percentage of professionally trained staff. Among its 14 teachers, 30.7 percent were graduates, 38.5 percent were diploma holders and 15.4 percent had certificates in pre-school education. Centre B had only 3 teachers with one being diploma trained, one untrained and one certificate trained.

As mentioned in Section 1.2.2.2 (c), prior to January 2008 (MOE, 2008b), the minimum entry requirement for registration of a pre-school teacher was a GCE 'O' certificate with at least a credit in three different subjects, including the English Language subject. Among the teacher participants, two-third of them (67 percent) had obtained GCE 'O' credits and a quarter (26 percent) had attained higher academic qualifications, such as GCE advanced level, diploma or degree levels. There was a small percentage (7 percent) of these teacher participants who did not attain a GCE 'O' certificate.

Among the teacher participants, 65 percent of them obtained between 3 and 5 credits, 28 percent scored 6 or more credits and 7 percent with fewer than 3 credits.

English Language is the main medium of instruction in pre-schools in Singapore. The regulations require all pre-school teachers to have a credit of at least C6 in English Language. However, the reported figures from the centres show that some of these teachers had not acquired good results in their English Language at their 'O' level examinations. Slightly more than half

of the participating teachers (53 percent) had a credit of either C5 or C6. Another 20 percent scored 'B's and 7 percent scored 'A's. However, one-fifth of them (20 percent) did not attain a minimum English Language standard of a credit of C6. As stated in Section 1.2.2.2 (c), MOE (2007a) had funding to support eligible teachers to attend a 40-hour English Communication Skills course.

In terms of years of experience in the early learning settings, one third of these teachers were relatively new to the pre-school field, with fewer than 5 years teaching experience. One-third had worked in the field between 5 and 10 years and the remainder had more than 10 years of experience teaching in pre-schools.

In a brief summary, these teacher participants were not from the high academic groups; however, at least 78 percent of them were professionally trained and 65 percent had working experience in the early childhood field for at least five years.

5.3 DATA ORGANIZATION AND PRESENTATION OF THE FINDINGS

5.3.1 Introduction

As described in Chapter IV, Sections 4.5.4 and 4.5.5, the quantitative data were mainly collected through observations using the research tools, i.e. the Child Involvement Scale, the Adult Engagement Scale and the Early Childhood Environmental Rating Scale. The qualitative data were gathered from the questionnaires, surveys, interviews, documents, newsletters, pamphlets, brochures, posters and displays on the walls within the centres' compound. Field notes and anecdotal notes were also taken while visiting the centres and their classrooms. With ample data collected, this section is written to outline how the data are organised, analysed and presented.

Quantitative and qualitative data collected were organised at two levels: micro and macro. At the macro level, the overall mean Child Involvement scores and the overall mean Adult Engagement scores from the 8 participating pre-schools were analysed and reported. They aim to answer the primary research questions. The overall mean scores also enabled me to look for emerging trends and patterns that might be the same or different from similar studies done by other researchers.

At the micro level, the Child Involvement levels and Adult Engagement levels of each centre were analysed. The findings were incorporated into each centre's report in Chapter VI. They aim to answer the secondary research questions.

The quantitative statistical data were done using the Statistical Package for Social Sciences (SPSS 17.0) and the Microsoft Office - Excel programme that worked out the frequency distributions, means and standard deviations. The inferential statistical data were also calculated using the statistical techniques such as one-way analysis of variance (ANOVA), independent t-test,

Pearson's r parametric test of correlation and 'K' means. The qualitative and open-ended response data were anlaysed by categorizing common themes and patterns identified from the data.

5.3.2 A Macro View: Through Analyzing the Overall Mean Scores of Child Involvement (CI), Adult Engagement (AE) and Environmental Rating (ECERS)

a) Child Involvement (CI)

At the macro level, the general findings show the overall mean child involvement (CI) scores of the eight participating pre-schools in the study in Year I and Year II.

The first part focuses on describing the findings on child involvement in Year I and Year II. This includes the child involvement level (CI) by gender and age groups. Thereafter, a comparative analysis of the data from Year I and Year II was presented to establish whether or not there was any improvement in the levels of child involvement This process is to help answer the primary research question as follows:

> *"In what ways, if any, would the adoption of a self-evaluation and development framework improve the level of child involvement in the selected pre-schools?"*

The second part focuses on identifying the association between two variables, i.e. the correlation between child involvement (CI) and early childhood environmental rating (ECERS) and the correlation between child involvement (CI) and adult engagement (AE). The results of Pearson's r parametric tests of correlation were presented to establish if there was any significant correlation.

b) Adult Engagement (AE)

The approach in analyzing the adult engagement data were presented on two levels. On the first level, the mean scores of the adult engagement related data were calculated to obtain the teacher engagement levels in Year I and Year II. This includes the findings on the adult engagement levels in general as well as the analysis of the mean scores of the individual sub-scales: sensitivity, stimulation and autonomy.

With a comparative analysis of the adult engagement levels in Year I and Year II, the findings were able to establish evidence of improvement, if any, so as to answer another primary research question as follows:

> *"In what ways, if any, would the adoption of a self-evaluation and development framework improve the level of adult engagement with children in the selected pre-schools?"*

On the second level, cluster analysis, using a non-hierarchical clustering method 'K-Means', is an exploratory data analysis technique designed to reveal the natural groupings within a collection of data. The respondents who behave similarly across the three sub-scales of sensitivity, stimulation and autonomy, will fall into the same cluster while those far apart should be in different clusters.

For this study, this method enabled the discovery of potentially three groups of respondents with distinct characteristics in accordance with the three sub-scales. The three clusters are the high-performer cluster, mediocre-performer cluster and under-performer cluster. The objective of this analysis aims at finding distinctive type of respondents, so that a more targeted and effective teaching interventions may be explored. An in-depth analysis was carried out with reference to the teachers' age group, years of experience, professional qualifications, academic qualifications and English Language proficiency.

c) Early Childhood Environmental Rating (ECERS)

The Early Childhood Environmental Rating Scale (ECERS) is a diagnostic tool used by the selected pre-schools to establish their baseline quality standards when they started their cycle of evaluation in 2005. The ECERS scorings were used to show the quality profile of each centre under seven domains. A sample ECERS profile of a centre is attached in Appendix Q. Using this as a diagnostic tool, combined with other relevant data, these pre-schools were able to identify their strengths and weaknesses as a consideration of formulating effective strategies and action plans for centre improvement. The ECERS tool was not used again in the second year of the study to assess the quality of these centres, as improvement on various domains stated in the ECERS would not likely be obvious in the ECERS profile if it was conducted within a span of one year. In addition, the Pearson's r parametric test of correlation was carried out to find out if there were any relationship between the environmental rating and the child involvement. The tests were also intended to find out if there was any relationship between the environmental rating and the adult engagement.

5.3.3 A Micro View: Through Analyzing and Reporting the Self-Evaluation and Development Process of Each Centre

The report of each centre in Chapter VI describes the setting of the centre and is followed by a detailed statement of the journey that the centre went through. The outline of each report includes two main parts with an outline as follows:

a) The study setting:

The description includes four areas:

i. location

ii. enrolment and staffing

iii. facilities and programmes
iv. leadership and management

b) The process of self-evaluation and development cycle:
The description on the process includes four phases:
i. self-evaluation phase
ii. action planning phase
iii. improvement phase
iv. reflection phase

At the evaluation phase, the Year I data, collected from using the Child Involvement Scale, Adult Engagement Scale and Early Childhood Environmental Rating Scale were analysed and findings presented. This represents a data-based assessment, which is an objective way to assess the quality provision of the centre.

Subsequently, action plans were drawn and implemented during the improvement phase considering the strengths and weaknesses identified. At the improvement phase, the Year II data were anlaysed to show the child involvement levels and adult engagement levels. The Year II findings were then compared with the data of Year I in order to determine if any change had occurred to ascertain if there was an improvement on the child involvement levels, adult engagement levels and other areas after implementing the self-evaluation and development framework.

At the reflection phase, the reflection logs from the teacher participants and anecdotal notes from the principals and me were cited to identify the possible factors contributing to or limiting the success or failure of the implementation of the self-evaluation and development framework.

Besides quantitative data, qualitative data were gathered through anecdotal notes while observing teachers and principals at work in the centres, the

dialogues and discussions with the centre staff, and the reflection logs returned by the teachers and principals. These qualitative and open-ended response data were categorized under common themes and patterns identified from the data.

The commitment to building the capacity of its people clearly is the key motivational factor for diagnosing the problems and the renewal and improvement of a pre-school. With the evidence gained from the quantitative and qualitative data, the centres' reports in Chapter VI provide information that helps answer the secondary research questions.

(i) In what ways, if any, would the adoption of a self-evaluation and development framework help enhance teachers' capabilities and skills in the selected pre-schools?

(ii) In what ways, if any, would the adoption of a self-evaluation and development framework help improve leaders' capabilities and skills, and in turn help effect organisational change in the selected pre-schools?

5.3.4 Section Summary

The intent of this section was to provide a background information of the characteristic features of the participating centres, the student and teacher participants. It also gives an outline on how the data were analysed, organized and presented. This outline had guided me in answering the primary and secondary research questions. The following two sections provide a detailed write-up on the research findings to answer the two primary research questions.

5.4 FINDINGS ON CHILD INVOLVEMENT (CI)

5.4.1 Comparing Child Involvement (CI) in Year I and Year II

To provide evidence to answer the primary research question, the first sub-question would be to ask if there was any significant difference in the child involvement levels of student participants from Year I and Year II after the implementation of a self-evaluation and development framework.

The mean CI score in Year II (M=3.91, SD=.86) was found to be higher than the mean CI score in Year I (M=3.62, SD=.89). Independent t-tests were carried out and the results show that there was a significant difference (t=-6.663, df=1581, p<0.05) between the mean scores Year I and Year II.

This range of scoring of 3.62 in Year I and 3.91 in Year II was similar to the findings noted in other similar studies. For example, Laevers (1994), one of the tool's authors, noted that "the average level of involvement of a class is a relatively stable factor" (1994b, p.12) and within the range of 3.0 and 4.0. Pascal (cited in Winter 2003, p.152) also found in the Effective Early Learning programme (EEL) study that the range of the mean score of child involvement was between 3.5 and 4.0. Similar findings were noted by Ure (2004) and Winter (2003) as well. In this study, the mean CI score of 3.62 in Year I and the mean CI score of 3.91 in Year II was within the range found in the above-mentioned studies.

5.4.2 Comparing Child Involvement (CI) by Centres

In this study, Table 5.7 shows an increase in the mean CI scores from Year I to Year II in seven out of the eight participating centres. The difference in the mean CI scores was between -0.0434 and +0.7713.

Table 5.7: Comparing Child Involvement (CI), Year I and Year II

Centre	Year I (2005)		Year II (2006)		Difference in
	Mean CI score (*M*)	*n*	Mean CI score (*M*)	*n*	mean CI score
A	3.8952	62	4.0521	48	0.1569
B	3.5370	90	4.3083	60	0.7713
C	3.4583	148	3.6323	131	0.1740
D	3.7156	92	3.6722	69	-0.0434
E	3.8298	95	4.1871	114	0.3573
F	3.8269	78	3.9497	53	0.1228
G	3.4874	132	3.8426	144	0.3552
H	3.4719	95	4.0010	172	0.5291
Overall mean score of 8 centres	3.6187	792	3.9322	791	0.3135

Using the mean CI score of 3.62 in Year I as a benchmark for quality among the eight participating centres, four centres had their mean CI scores above this mark and were termed as better performing centres within this study context. They were Centres A, D, E and F (Figure 5.1).

In Year II, using the mean CI score of 3.91 as a benchmark for quality, five out of the eight pre-schools had their mean CI scores above this mark. The better performers were Centres A, B, E, F and H (Figure 5.2).

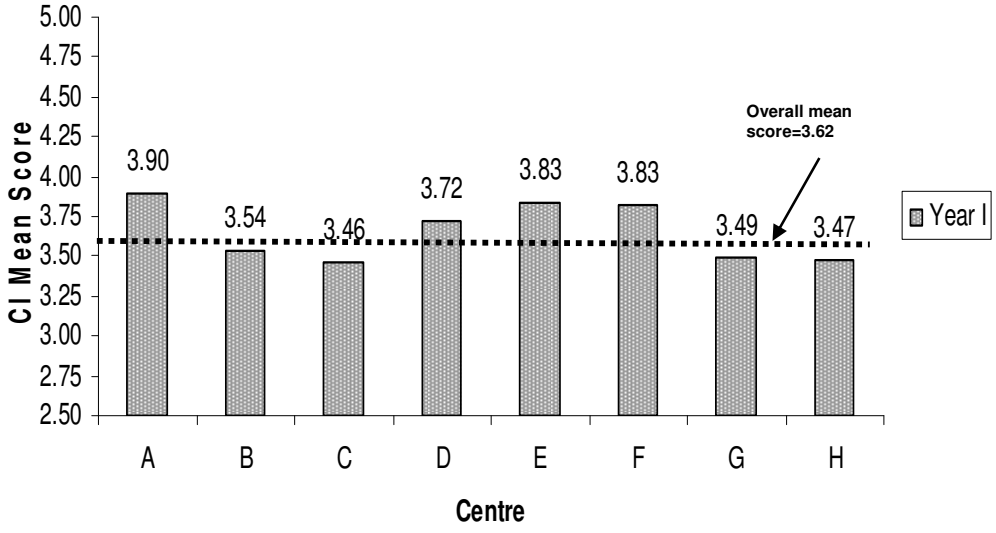


Figure 5.1: Comparing Mean Scores of Child Involvement (CI) by Centres, Year I

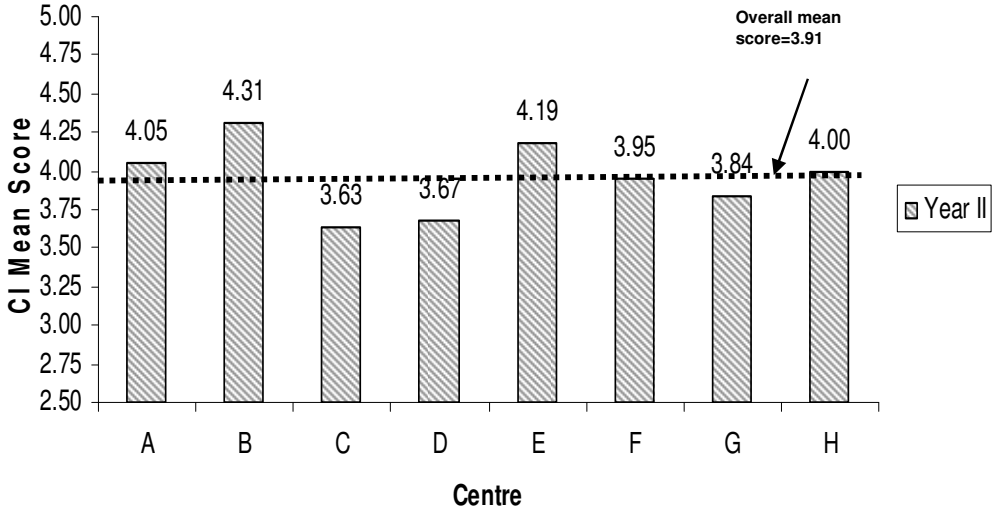


Figure 5.2: Comparing Mean Scores of Child Involvement (CI) by Centres, Year II

5.4.3 Comparing Child Involvement (CI) by Percentage of Observations at Each Grade Level

Figure 5.3 shows Child Involvement (CI) by the percentage of Observations at each grade level. Where child involvement grade '1' indicates a child showing no involvement in tasks and grade '5' shows a child fully involved in tasks, Figure 5.3 compares the percentages of observations at each grade level in Year I and Year II. In Year I, the grade levels observed from highest to lowest percentages were as follows: Levels 4, 5, 3, 2 and 1. In Year II, the order remained the same.

In brief, from Year I to Year II, the child involvement levels show a trend of an increase in the high grades of Levels 4 and 5 and a decrease in the low grades of Levels 1, 2 and 3.

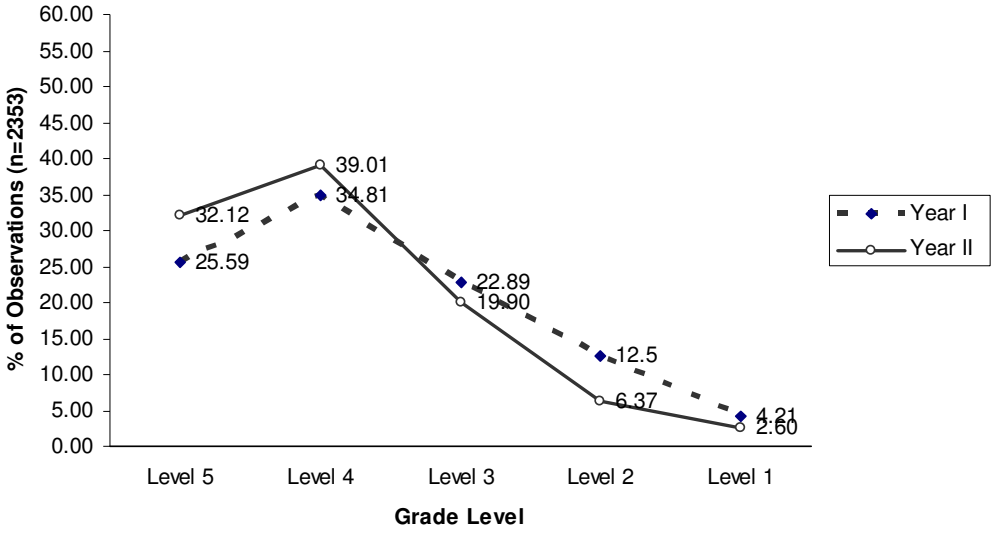


Figure 5.3: Comparing Child Involvement (CI) by Percentage of Observations at Each Grade Level, Year I and Year II

5.4.4 Comparing Child Involvement (CI) by Gender in Year I and Year II

Research has shown gender-related patterns in activities in pre-school settings (Brooker & Ha, 2005; Freeman, 2007; Laevers, 2000; Lee-Thomas, Sumsion & Roberts, 2006; Ulich & Mayr, 2002). To find out if the difference in mean CI scores between male and female children was statistically significant in this study, independent *t*-tests were carried out.

In Year I, the mean CI score of the female students (M=3.69, SD=.88) was found to be higher than that of the male students (M=3.55, SD=.89). The independent t-test results show that there was a significant difference (t=2.159, df=789, p<0.05) between the results for the two genders.

In Year II, the mean CI score of female students (M=3.96, SD=.82) was found to be slightly higher than the mean CI score of the male students (M=3.90, SD=.81). However, the independent t-test showed that the difference was not statistically significant (t=1.159, df=789, p>0.05).

The insignificant test results do not imply that there are no gender-based preferences for learning activities and settings. To examine if the male and female children had the same preferences for certain types of activities and settings, further statistical tests were carried out and the findings were presented in the following sections.

5.4.5 Comparing Child Involvement (CI) by Gender by Learning Activities

In this study, the data was further analysed to find out gender-based differences in terms of the learning activities that they were doing, namely learning related to:

a) creative development
b) mother-tongue language
c) language and literacy
d) maths and numeracy
e) moral and spiritual development
f) personal and social development
g) physical development, and
h) understanding of the world.

The independent t-tests were carried out on the data collected at the three observation sessions within two weeks in Year I. The results show that there was a significant difference between female students (M=3.69, SD=.88) and male students (M=3.55, SD=.89) when their learning activities were related to (i) creative development (t=-1.636, df=789, p<0.05) (ii) understanding the world (t=1.320, df=789, p<0.05), (iii) mother-tongue language (t=1.329, df=789, p<0.05) and (iv) personal and social development (t=1.598, df=789, p<0.05). From the Year I line chart (Figure 5.4), we can indentify the peaks on the activities that show the greatest differences in the CI mean scores between male and female children.

Research in developmental psychology has shown that there are gender-based preferences for activities and settings as well as different styles of interaction (Bee & Boyd, 2004; Brooker & Ha, 2005; Freeman, 2007; Hyun & Choi, 2004; Laevers & Verboven, 2000; Lee-Thomas, Sumsion & Roberts, 2006; Schaffer, 1996; Ulich & Mayr, 2002).

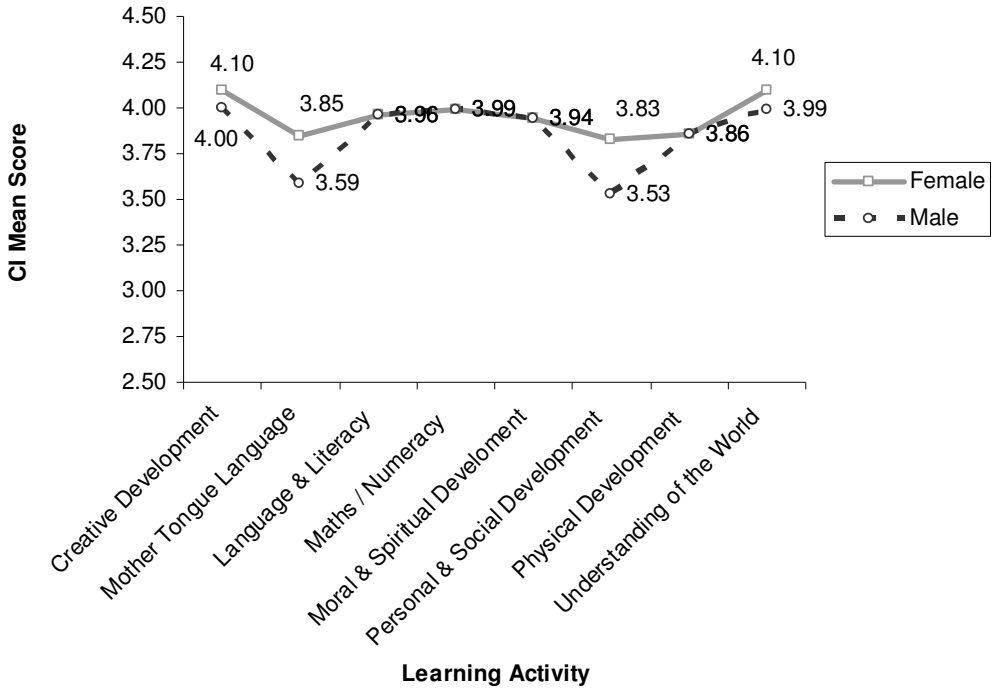


Figure 5.4: Comparing Child Involvement (CI) by Gender and Learning Activities, Year I

In Year II, the independent t-test results from the average of the mean CI scores of the three observations in Year II show that there was a significant difference between female students (M=3.96, SD=.82) and male students (M=3.90, SD=.81) when their learning activities were related to (i) understanding the world (t=-1.311, df=789, p<0.05) and (ii) physical development (t=-1.648, df=789, p<0.05). From the Year II line chart (Figure 5.5), we can identify the two types of learning activities that show the greatest differences in the CI mean scores between male and female students.

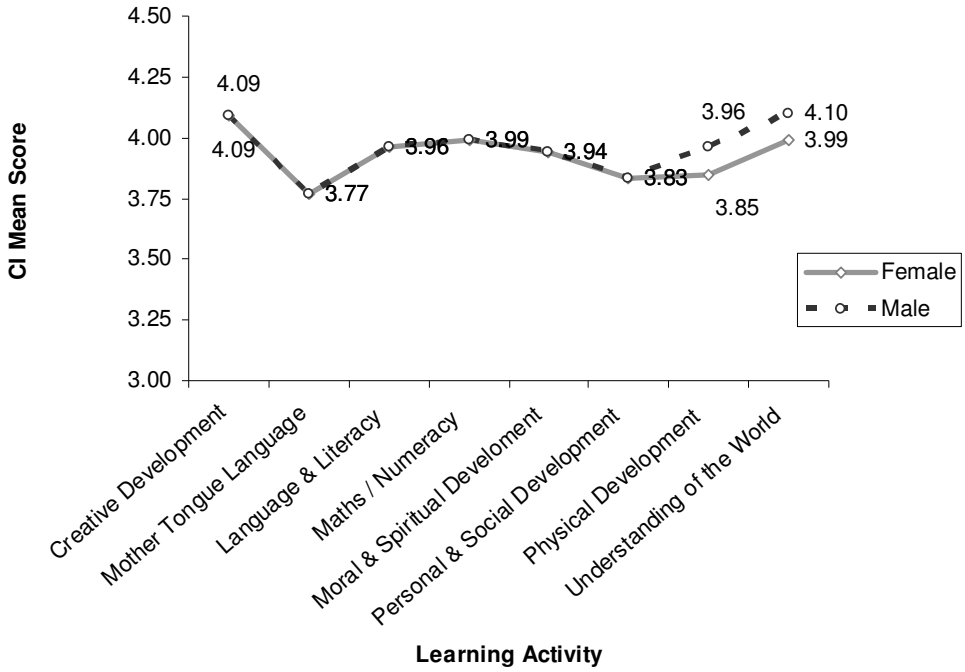


Figure 5.5: Comparing Child Involvement (CI) by Gender and Learning Activities, Year II

In Year I of this study, the findings on gender differences by activity type seemed to support the findings of Ulich and Mayr (2002) who noted that girls had significantly higher involvement scores with the more creativity-related activities such as “moulding and modelling, drawing and painting, cutting, gluing and folding, role play, acting”. Boys had higher scores when engaged in scientific-inquiry type of activities like water and sand play, wood work, at the discovery tables and while playing with large and small construction blocks (2002, p.136-7).

Studies (Brooker & Ha, 2005; Freeman, 2007; Lee-Thomas, Sumsion & Roberts, 2006; Laevers & Verboven, 2000; Ulich & Mayr, 2002) revealed that the differences in involvement levels were not due to gender; instead Laevers and Verboven (2000) suggested that the social factors such as “unconscious attitudes and behaviours by parents”, “the distribution of roles between male

and female" and "media influence" were responsible for projecting certain images of men and women (p25). Ulich and Mayr (2000) also speculated that the cause was the "unevenly distributed educational and developmental chances of specific groups of children in relation to curriculum activities" (p.127).

5.4.6 Comparing Child Involvement (CI) by Gender and Learning Settings

In this study, the data were further analysed to find out gender differences in terms of the settings where the activities took place. For example: at the/ during

a) block corner
b) dramatic corner
c) music and movement area
d) library and reading corner
e) table-toy section
f) arts & crafts section
g) worksheet activity tables
h) creative writing area
i) outdoor play area
j) circle time
k) computer activity area

To investigate further, a series of Analysis of Variance (ANOVA) tests were conducted over three variables, i.e. child involvement by gender and settings. The ANOVA test results on the average of three observations in Year I show that there were significant gender differences when they were learning in various settings ($F_{(2, 791)}$ =4.660, df=1, p<0.05). From the line chart in Figure 5.6, female students had significantly higher mean CI scores than male

students during the circle time, at the worksheet activity tables and in the library and reading corner. Male students had higher mean CI score than female students in the block corner.

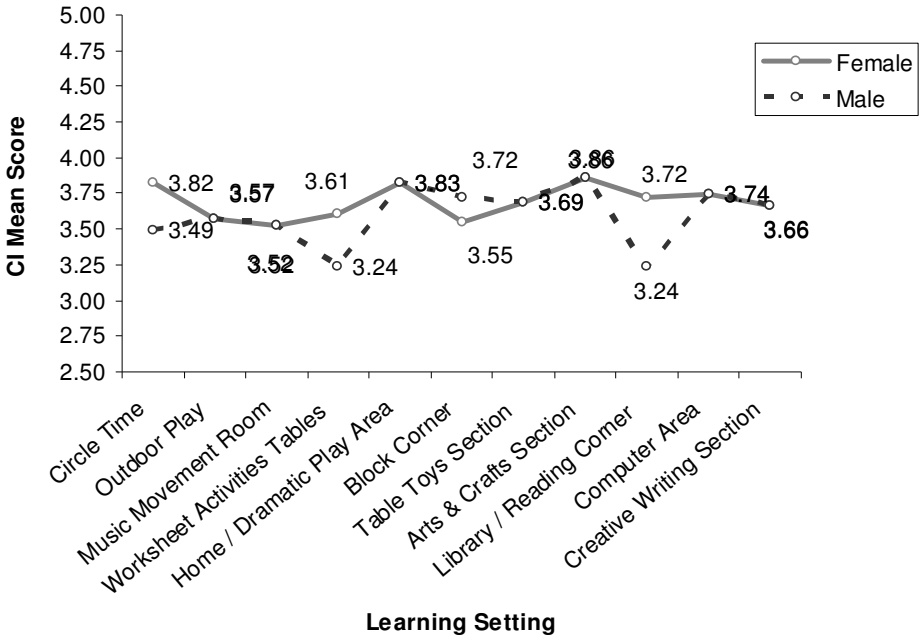


Figure 5.6: Comparing Child Involvement (CI) by Gender and Learning Settings, Year I

In Year II of the study, the ANOVA test results indicate that there was no significant gender difference ($F_{(2,\ 790)}$ =2.385, df=1, p>0.05) when their learning activities were carried out in various settings. From the Year II line chart (Figure 5.7), we cannot see any peaks indicating settings that show the greatest differences in the mean CI scores between male and female students.

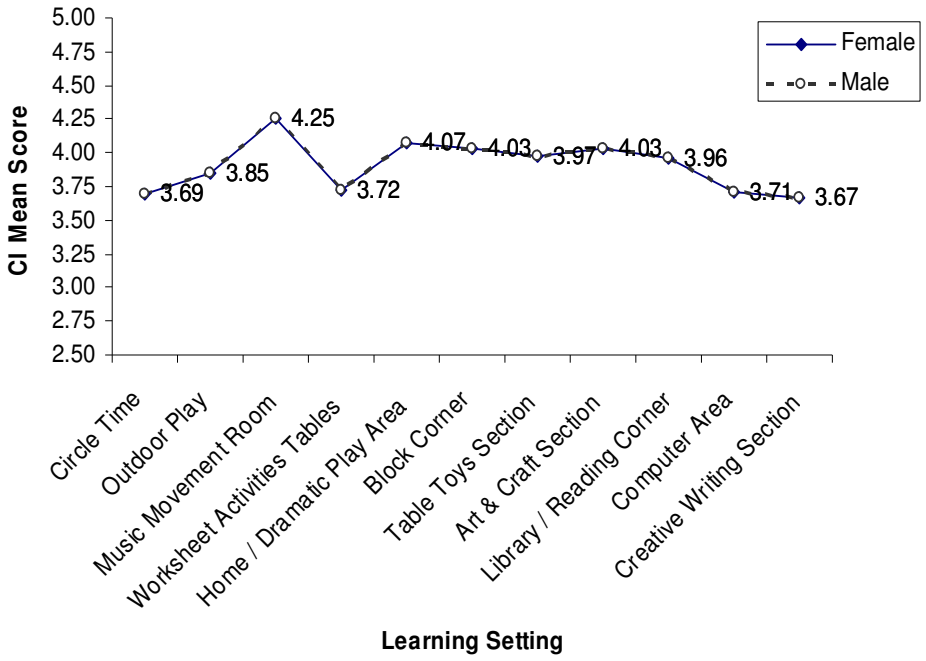


Figure 5.7: Comparing Child Involvement (CI) by Gender and Learning Settings, Year II

5.4.7 Comparing Child Involvement (CI) by Age Groups in Year I and Year II

In Singapore, kindergartens place their children turning 4 years old as at January of the year in Kindergarten 1 (K1) class groups and children turning 5 years old in Kindergarten 2 (K2) class groups. To find out if there is any significant difference between the K1 age group and K2 age group in terms of child involvement, independent t-tests were carried out.

In Year I, the mean CI score of the K1 age group (M =3.69, SD=.82) was found to be higher than that for the K2 age group (M =3.55, SD=.94). The independent t-test results show that there was a significant difference in the mean scores (t=-2.261, df=790, p<0.05) between the two age groups.

In Year II, the mean CI score for the K1 age group was 3.95 (M =3.95, SD=.77) and for the K2 age group, it was 3.92 (M=3.92, SD=.85). The independent t-test results show that there was no significant difference in scores (t=-0.453, df=789, p>0.05) between the two age groups.

The results in this study are different from the findings described by Ulich & Mayr (2002) whose studies revealed that the "level of involvement rises proportionately with the age" (p.139).

To find out if the K1 and K2 age groups had the same preferences for the specific content learning activities and specific learning settings that they interacted well in, a further statistical testing on age group difference in child involvement by activities and settings was done and is described in the following sections.

5.4.8 Comparing Child Involvement (CI) by Age Groups and Learning Activities

Studies have been done on age-related patterns in activities in pre-school settings (Ulich & Mayr, 2002; Laevers, 2000). For this study, further analysis was attempted to identify other sources of age-related differences in the context of learning activities as listed in Section 5.4.5 as follows:

a) creative development
b) mother-tongue language
c) language and literacy
d) maths and numeracy
e) moral and spiritual development
f) personal and social development
g) physical development, and
h) understanding of the world

The independent *t*-tests were conducted over 3 variables, i.e. child involvement by age groups and learning activities recorded at the three observations.

The independent t-tests were carried out on the mean scores of three observations in Year I. The results show that the K1 age group (*M* =3.69, *SD*=.82) and K2 age group (*M* =3.55, *SD*=.94) had significantly difference when they were engaged in activities related to (i) creative development (*t*=-2.705, df=790, *p*<0.05), (ii) language and literacy (*t*=-2.550, df=790, *p*<0.05) and (iii) math and numeracy (*t*=-3.392, df=790, *p*<0.05). From the Year I study, the line chart (Figure 5.8) shows the peaks at the activities that show the greatest difference in the mean CI scores between the two different age groups.

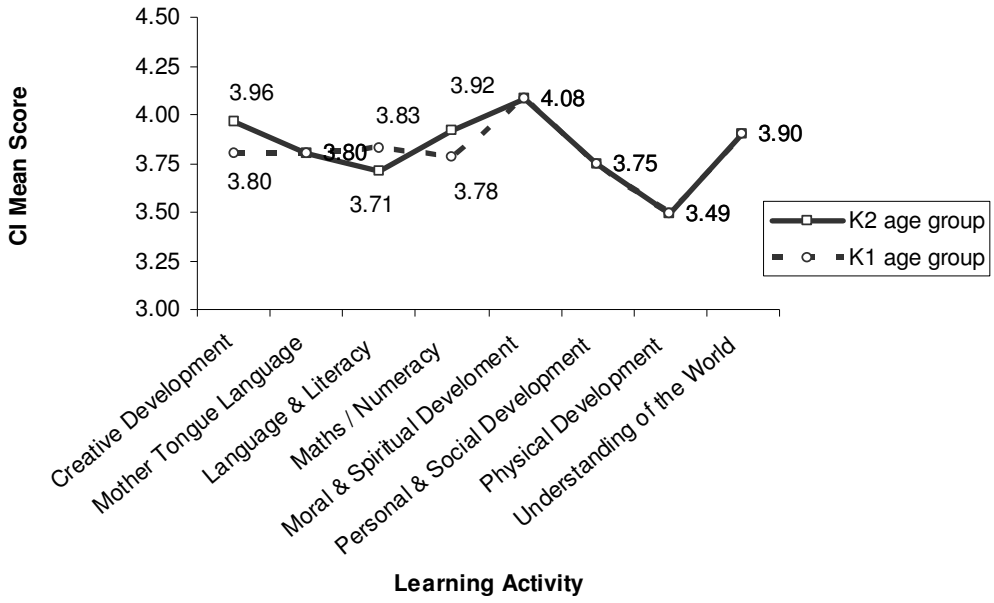


Figure 5.8: Comparing Child Involvement (CI) by Age Groups and Learning Activities, Year I

In Year II, the independent t-test results show that the K1 age group (*M* =3.95, *SD*=.77) and K2 age group (*M*=3.92, *SD*=.85) had significantly

difference when they were engaged in activities related to (i) creative development (t=4.229, df=789, p<0.05), (ii) understanding of the world (t=2.026, df=789, p<0.05), (iii) language and literacy (t=-1.983, df=789, p<0.05) and (iv) mother tongue language (t=-2.022, df=789, p<0.05). From the Year II study, the line chart (Figure 5.9) shows the peaks at the activities that show the greatest difference in the mean CI scores between the two different age groups.

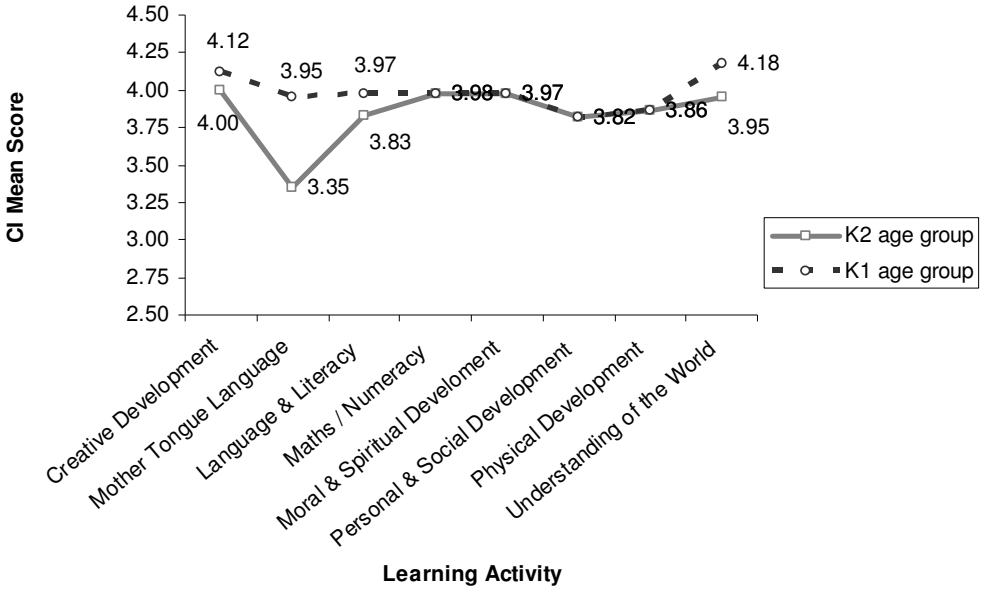


Figure 5.9: Comparing Child Involvement (CI) by Age Groups and Learning Activities, Year II

5.4.9 Comparing Child Involvement (CI) by Age Groups and Learning Settings

In this study, the data were further analyzed to find out whether the mean CI scores of the K1 and K2 age groups differed in different settings as listed in Section 5.4.6 as follows: at /during the:

a) circle time
b) outdoor play area
c) music and movement room
d) worksheet activities tables
e) home and dramatic corner
f) block corner
g) table-toy section
h) arts & crafts section
i) library and reading section
j) creative writing area
k) computer activity area

To investigate further, ANOVA tests were conducted over three variables, i.e. child involvement by age group and setting recorded over the three observations.

The ANOVA test results on the Year I data show that there were significant age group differences when they were learning in different settings ($F_{(2,792)}$ =6.995, df=1, p<0.05). From the Year I line chart (Figure 5.10), we can identify peaks at settings that show the greatest differences in the CI mean scores between the K1 age group (M =3.69, SD=.82) and K2 age group (M =3.55, SD=.94). The K2 age groups were more engaged when they were having circle time, at the outdoor play area, in the home/ dramatic play corner, in the block corner, at the table toys section, at the arts and crafts section and at the computer area.

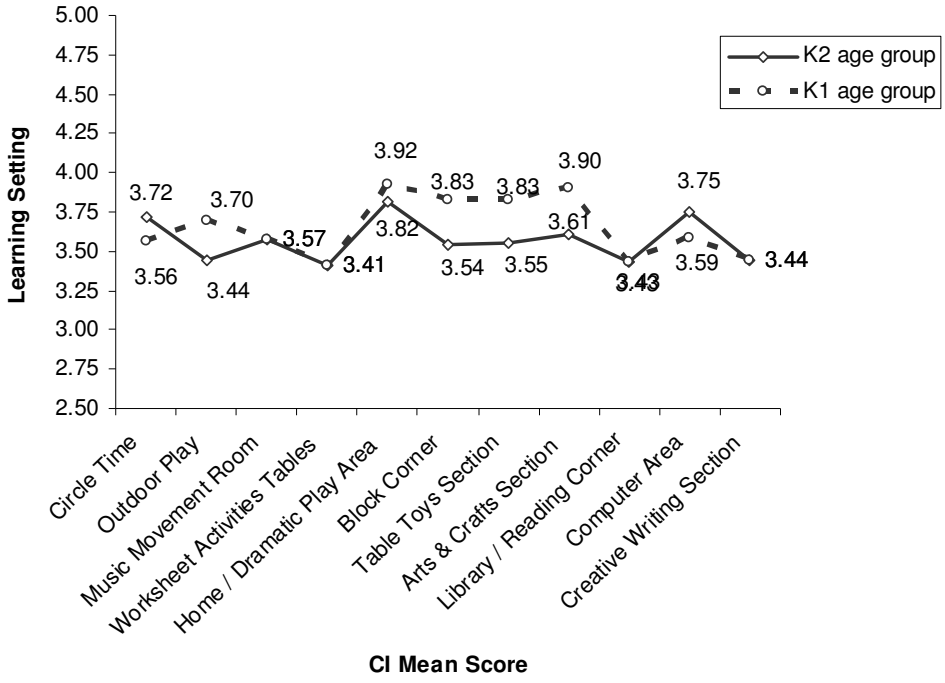


Figure 5.10: Comparing Child Involvement (CI) by Age Groups an Learning Settings, Year I

In Year II of this study, the ANOVA test results show no significant age group differences ($F_{(2,792)}$=6.552, *df*=1, *p*>0.05) when the children were learning at different settings. From the year II line chart (Figure 5.11), we cannot identify any differences in the mean CI scores between the K1 age group and K2 age groups.

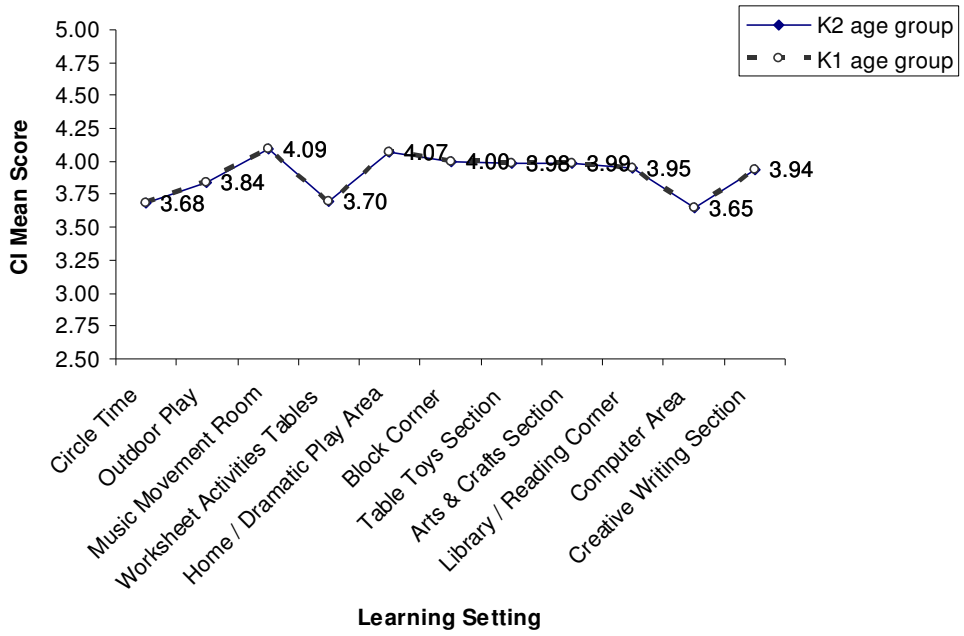


Figure 5.11: Comparing Child Involvement (CI) by Age Groups and Learning Settings, Year II

5.4.10 Findings on Correlation between Child Involvement (CI) and Early Childhood Environmental Rating (ECERS)

Table 5.8 shows the mean scores of the environmental rating of the eight participating centres. Within this study context, when the overall ECERS mean score of 4.5 was used as a benchmark, Centres A, E and F had their mean scores higher than the mark. These centres with high mean ECERS scores also had mean CI scores which were higher than the overall mean CI score. However, Centre G, which had a high ECERS mean score scored low on its mean CI scores for both years.

To measure the degree of relationship between child involvement level and early childhood environmental rating, Pearson's r parametric test of correlation tests were carried out.

Table 5.8: Mean Scores of Child Involvement (CI) and Environmental Rating (ECERS), Year I and Year II

	Year I (2005)			Year II (2006)	
	ECERS	CI		CI	
Centre	Mean score (*M*)	Mean score (*M*)	*n*	Mean score *(M)*	*n*
A	4.69	3.8952	62	4.0521	48
B	3.69	3.5370	90	4.3083	60
C	4.00	3.4583	148	3.6323	131
D	3.59	3.7156	92	3.6722	69
E	5.69	3.8298	95	4.1871	114
F	5.02	3.8269	78	3.9497	53
G	4.90	3.4874	132	3.8426	144
H	4.33	3.4719	95	4.0010	172
Overall mean score of 8 centres	4.50	3.6187	792	3.9322	791

Based on Year I data, Pearson's r parametric test of correlation shows a significant negative correlation between the mean CI score and the mean ECERS score (r=-0.152, n=792, p<0.05). In Year II, Pearson's r parametric test of correlation also shows a significant correlation, a positive correlation, between the mean CI score and the mean ECERS score (r=0.289, n=791, p<0.05).

In conclusion, in this study, there was a clear correlation between child involvement and the quality of the early childhood environment. In 2005, before the implementation of a self-evaluation and development framework, the correlation was negative. After the implementation of the framework in 2006, the correlation was positive. However, these correlations do not imply causation between the two variables.

5.4.11 Findings on Correlation between Child Involvement (CI) and Adult Engagement (AE)

To find out if there is any relationship between child involvement and adult engagement, Pearson's r tests were carried out. The results also include the correlation between child involvement and individual sub-scales of adult engagement, i.e. sensitivity, stimulation and autonomy.

Based on Year I data, Pearson's r test results show that there was no correlation (r=0.144, n=67, p>0.05) between AE (M=3.46, SD=.27) and CI (M=3.62, SD=.89) neither were there any correlation (r=0.035, n=67, p>0.05) between CI and sensitivity (M=3.96, SD=.44), correlation (r=0.054, n=67, p>0.05) between CI and stimulation (M=3.39, SD=.59) and correlation (r=0.141, n=67, p>0.05) between CI and autonomy (M=3.03, SD=.49).

However, the Pearson's r test results of Year II data show that there was a significant positive correlation (r=0.774, n=67, p<0.05) between CI (M=3.91, SD=.86) and AE (M=3.31, SD=.28). There were also significant positive correlation (r=0.326, n=67, p<0.05) between CI and sensitivity; correlation (r=0.335, n=67, p<0.05) between CI and stimulation and correlation (r=0.447, n=67, p<0.05) between CI and autonomy. Correlation was significant at the 0.01 level (2-tailed).

In this study, there was no correlation between CI and AE in Year I. However, in Year II, the statistical testing results show a positive correlation between CI and AE; and between CI and the individual sub-scales. These correlations do not imply causation among these variables.

5.4.12 Section Summary of Findings on Child Involvement

In summary, the descriptive statistics and inferential statistics on the child involvement profiles in this study have resulted in the following findings:

a) There was a significant difference between student cohorts of Year I and Year II in terms of child involvement. The Year II cohort showed higher CI levels.

b) There was a significant difference between male and female students in terms of child involvement in Year I. Female students had higher mean CI scores compared to male students. However, in Year II, there was no significant gender difference in scores.

c) There was a significant gender difference in child involvement for learning activities related to specific content areas.

d) There was a significant gender difference in child involvement when students learnt in different settings in Year I. However, this difference was insignificant in Year II.

e) There was a significant age group-related difference for the K1 and K2 age groups in child involvement in Year I. The K1 age group showed higher CI levels than the K2 age group. But this difference was insignificant in Year II.

f) There was a significant age group-related difference for the K1 and K2 age groups in child involvement with reference to learning activities related to specific content areas in both years. However, the activity types varied in the two years.

g) There was a significant age group-related difference in child involvement with reference to learning settings in Year I. But the difference was insignificant in Year II.

h) There was a correlation between the mean score for child involvement and the mean score for early childhood environmental rating. In this study, the Year I results reflect a negative correlation while Year II results show a positive correlation.

i) Year I data shows no significant correlation between child involvement and adult engagement. There was also no significant correlation between child involvement and the individual subscales. However the Year II data reveals a significant positive correlation between CI and AE and between CI and the individual subscales.

The above findings have provided substantial evidence to answer the primary research question:

> *"In what ways, if any, would the adoption of a self-evaluation and development framework improve the level of child involvement in the selected pre-schools?"*

In brief, the quantitative analysis of child involvement revealed an improvement in child involvement levels in the participating pre-schools after they went through a self-evaluation and development process. The findings suggest that the use of such a framework might have helped improve the child involvement levels.

The findings in this study also point to gender and age group-related differences with reference to activities and settings that attract children's attention. This may suggest that there might be a need for the practitioners to think of teaching strategies and methods by looking at the activities and their

related settings that could yield higher child involvement levels for each gender and age group.

5.5 RESULTS ON ADULT ENGAGEMENT (AE)

5.5.1 Comparing Adult Engagement (AE) in Year I and Year II

To find out if there were any significant differences between Year I and Year II in terms of teacher engagement levels and in terms of the individual sub-scales, independent t-tests were carried out.

In Year I of the study, the mean AE score (M=3.46, SD=.27) was found to be higher than that of Year II (M=3.31, SD=.28). In this study, the independent t-test results show a significant difference (t=3.225, df=132, p<0.05) between the mean AE scores in Year I and Year II.

With reference to the subscale sensitivity, in Year I, the mean sensitivity score (M =3.96, SD =.44) was found to be higher than that in Year II (M =3.62, SD=.55). The independent t-test results show that there was a significant difference (t= 4.007, df=132, p<0.05) between the mean sensitivity scores in Year I and Year II.

With reference to the subscale stimulation, in Year I, the mean stimulation score (M=3.39, SD=.59) was found to be higher than that in Year II (M=3.33, SD=.63). The independent t-test results show no significant difference (t=.517, df=132, p>0.05) between the mean stimulation scores in Year I and Year II.

With reference to the subscale autonomy, in Year I, the mean autonomy score (M=3.03, SD=.49) was found to be higher than that in Year II (M=2.98, SD=.57). The independent t-test results show no significant difference

(t=.657, df=132, p>0.05) between the mean autonomy scores in Year I and Year II.

5.5.2 Comparing Adult Engagement (AE) by Centres

The overall mean AE scores for Year I and Year II were 3.46 and 3.31 respectively (Figures 5.12 & 5.13). Using the overall mean AE score of Year I (M=3.46, SD=.27) as a benchmark for quality, Figure 5.12 shows that four (Centres A, E, F and G) out of the eight participating pre-schools scored well above scored the mark.

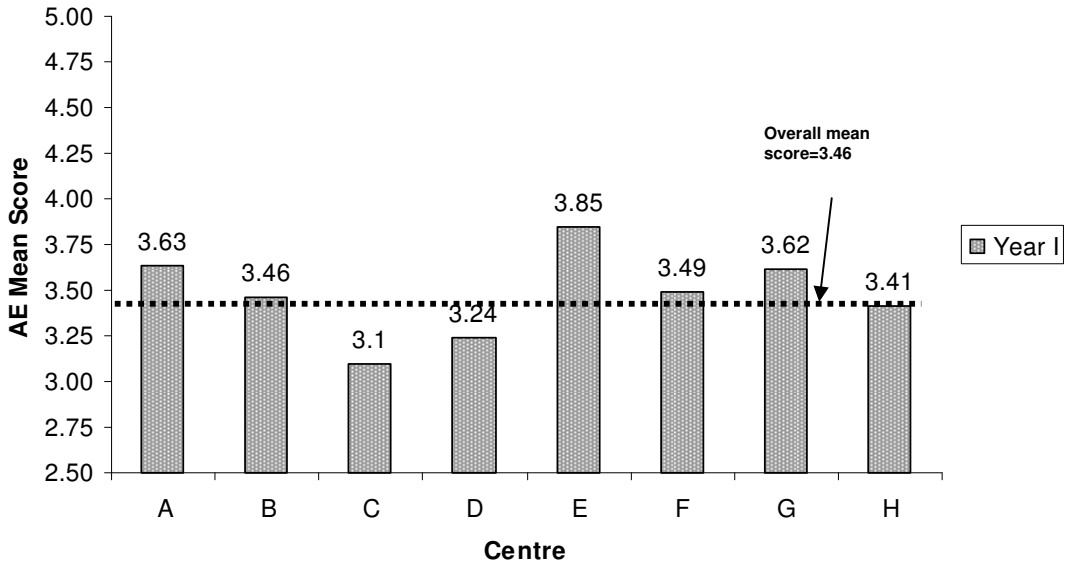


Figure 5.12: Comparing Mean Scores of Adult Engagement (AE) by Centres, Year I

Similarly, using the overall mean AE score of Year II (M=3.31, SD=.28) as a benchmark for quality, Figure 5.13 shows that five out of the eight participating pre-schools were better performers in Year II. Centres A, E and G remained in the better performing list. Centres B and H came into the list whereas Centre F did not make the list.

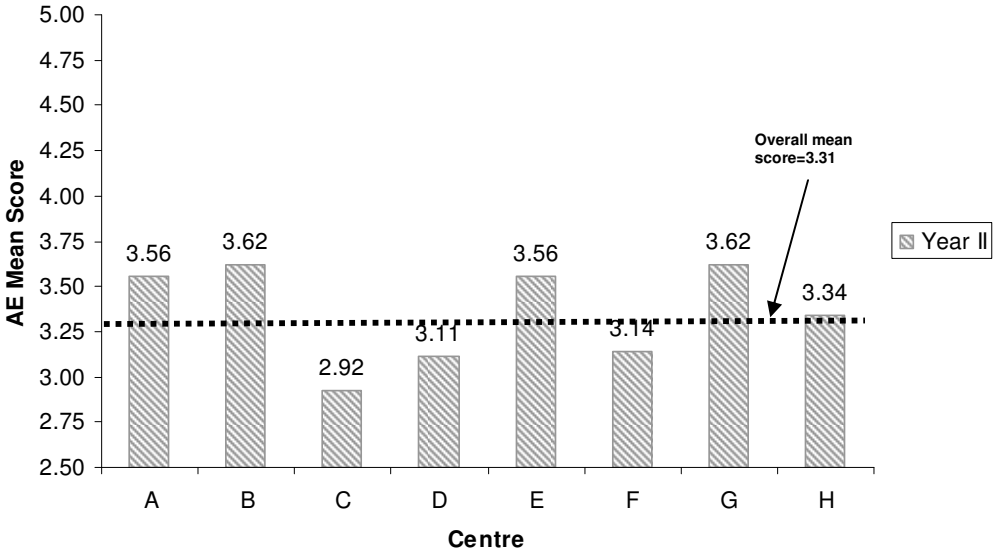


Figure 5.13: Comparing Mean Score of Adult Engagement (AE) by Centres, Year II

Table 5.9 shows the mean AE scores by centres. Two out of the eight participating centres (i.e. Centre B and Centre G) had an increase in their mean AE scores from Year I to Year II. The other six centres had a decrease in their mean AE scores from Year I to Year II.

Quatitative data from the teachers' reflection logs revealed that there was resistance to change in some of these participating centres. One comment (T6) revealed that some teachers were negative about the use of various scales for self-evaluation. A teacher (T49) said that the self-evaluation process was "worth the time and at the same time, time consuming. It may create anxiety when we do not meet our own expectations". A more in-depth discussion on issues about innovation and resistance to change will be discussed in Chapter VI and Chapter VII.

Table 5.9:Comparing Mean Adult Engagement (AE) Scores,Year I and Year II

Centre	Year I (2005)		Year II (2006)		Difference in
	mean AE score (*M*)	*n*	mean AE score (*M*)	*n*	mean score
A	3.6296	3	3.5648	3	-0.0648
B	3.4630	6	3.6204	6	+0.1574
C	3.1037	15	2.9241	15	-0.1796
D	3.2396	8	3.1076	8	-0.1320
E	3.8540	14	3.5615	14	-0.2925
F	3.4861	8	3.1417	8	-0.3444
G	3.6151	7	3.6230	7	+0.0079
H	3.4120	6	3.3426	6	-0.0694
Overall mean score of 8 centres	3.4591	67	3.3067	67	-0.1524

5.5.3 Comparing Adult Engagement (AE) by its Three Sub-scales

a) Subscale Sensitivity

As described in Chapter III, Section 3.4.4.1, Chapter III, sensitivity refers to the facilitative quality and interpersonal quality (Bertram, 1996; Roger, 1983) of a teacher while interacting with children. Bertram (1996) described that “sensitivity is operationalised through systematic observations which focus on the adult’s responsiveness to a range of children’s needs for respect, attentiveness, security, affection and praise” (p.147).

The Year I mean sensitivity score (M =3.96, SD =.44) was found to be higher than in Year II (M =3.62, SD=.55). In this study, the independent t-test results show that the mean score differed significantly (t=4.007, df=132, p<0.05).

Table 5.10 shows that in Year I, the mean sensitivity score from six participating centres (i.e. Centres A, B, E, F, G and H) were above the overall

mean sensitivity score. Whereas in Year II, four centres (i.e. Centres A, B, E and G) scored above the overall mean sensitivity score. It was also noticed that the mean sensitivity score from all the eight participating centres were lower in Year II as compared to the mean scores in Year I. The difference ranged between 0.2223 and 0.5583.

Table 5.10: Comparing Mean Sensitivity Score, Year I and Year II

	Year I (2005)			Year II (2006)			Difference
Centre	Mean sensitivty score (*M*)	*n*	SD	Mean sensitivity score (*M*)	*n*	SD	in Mean Score
A	4.1667	3	.60093	3.9444	3	.41944	-0.2223
B	4.2500	6	.39087	3.9306	6	.57595	-0.3194
C	3.6500	15	.47788	3.3222	15	.49588	-0.3278
D	3.6563	8	.35197	3.3958	8	.68971	-0.2605
E	4.2143	14	.28063	3.8214	14	.56126	-0.3929
F	3.9792	8	.47507	3.5625	8	.48744	-0.4167
G	4.0357	7	.15853	3.7857	7	.34311	-0.2500
H	4.0139	6	.30920	3.5556	6	.44305	-0.5583
Overall mean score of 8 centres	3.9577	67	.43625	3.6157	67	.54587	-0.3420

b). Subscale Stimulation

As elaborated in Chapter 3, Section 3.4.4.2, Bertram (1996) noted that a skilful teacher with the quality of stimulation would respond to children learning needs at an appropriate level, such as suggesting activities and/or giving information to stimulate thinking, action and communication (p.148).

The Year I mean stimulation score (M=3.39, SD=.59) was found to be higher than in Year II (M=3.33, SD=.63). Independent t-test results show that there was no significant difference (t=.517, df=132, p>0.05) between Year I and Year II.

Table 5.11 shows the number of centres that performed better than the overall mean stimulation score of that year went up from three centres (Centres A, E and G) in Year I to five centres (Centres A, B, E. G and H) in Year II. The mean stimulation scores of Centres A, B, G and H improved their scores from Year I to Year II. The other four centres (Centres D, E and F) had lower mean scores in Year II as compared to Year I.

Table 5.11: Comparing Mean Stimulation Scores, Year I and Year II

	Year I (2005)			Year II (2006)			Difference
Centre	Mean mulation stiscore (*M*)	*n*	SD	Mean sitmulation score (*M*)	*n*	SD	in mean score
A	3.6111	3	.67358	3.6944	3	.61426	+0.0833
B	3.3333	6	.50553	3.6250	6	.81437	+0.2917
C	2.9556	15	.44751	2.9444	15	.61048	-0.0112
D	3.2292	8	.59554	3.1771	8	.62271	-0.0521
E	3.8810	14	.42582	3.5893	14	.65492	-0,3017
F	3.2500	8	.68429	3.0625	8	.35565	-0.1875
G	3.6190	7	.39633	3.6667	7	.39675	+o.0477
H	3.3750	6	.60953	3.4028	6	.54113	+0.1278
Overall mean score of 8 centres	3.3868	67	.59045	3.3321	67	.63423	-0.0547

c) Subscale Autonomy

As stated in Section 3.4.4.3, Chapter III, Bertram (1996) defined autonomy as “the degree of freedom which the adult gives the child to experiment, make judgments, choose activities, take responsibility and express ideas” (p.149). He recognized that autonomy “encourages the negotiated responsibilities and allows for possibilities and experimentation” (p.151).

The mean autonomy score (*M*=3.03, *SD*=.49) in Year I was found to be higher than in Year II (*M*=2.98, *SD*=.57). Independent t-test results show that this difference was not significant (*t*=.657, df=132, *p*>0.05).

When comparing between the overall autonomy mean score and the mean autonomy scores of individual centre, Table 5.12 shows that the number of centres that performed better than the overall mean score of that year went up from four centres (Centres A, E, F and G) in Year I to five centres (Centres A, B, E. G and H) in Year II.

The mean autonomy scores (Table 5.12) from Centres B, G and H were higher in Year II as compared to their mean scores in Year I. The other five centres (i.e. Centres A, C, D, E and F) had their mean scores decreased from Year I to Year II by a range of 0.0455 to 0.4292.

Table 5.12: Comparing Mean Autonomy Scores, Year I and Year II

	Year I (2005)			Year II (2006)			Difference
Centre	Mean autonomy score (*M*)	*n*	SD	Mean autonomy score (*M*)	*n*	SD	in mean score
A	3.1111	3	.67358	3.0556	3	1.07152	-0.0455
B	2.8056	6	.45236	3.3056	6	.55943	+0.5000
C	2.7056	15	.32254	2.5056	15	.43469	-0.2000
D	2.8333	8	.62361	2.7500	8	.50982	-0.0833
E	3.4667	14	.28555	3.2738	14	.45577	-0.1929
F	3.2292	8	.30780	2.8000	8	.40941	-0.4292
G	3.1905	7	.43492	3.4167	7	.39087	+0.2262
H	2.8472	6	.47263	3.0694	6	.52286	+0.2222
Overall mean score of 8 centres	3.0328	67	.48713	2.9724	67	.57449	-0.0604

5.5.4 Comparing Adult Engagement (AE) Subscale Sensitivity by Percentage of Observations at Each Grade Level

a) Subscale Sensitivity

There are five grade levels indicating quality of adult engagement. '1' indicates a teacher interacting with children in a totally non-engaging manner and '5' represents a teacher interacting with children in a totally engaging manner. The variation in the subscale of sensitivity by its grade levels (Level 1-5) for teachers in Year I and Year II was shown in Figure 5.14.

In Year I, the observed percentage for grade levels from highest to lowest was: Levels 4, 5, 3, 2 and 1. In Year II, the sequence was: Levels 4, 3, 5, 2 and 1. The percentage for grade levels 2 and 3 had gone up and for grade levels 4 and 5, it went down. This seemed to suggest that the teachers were less sensitive toward children in Year II.

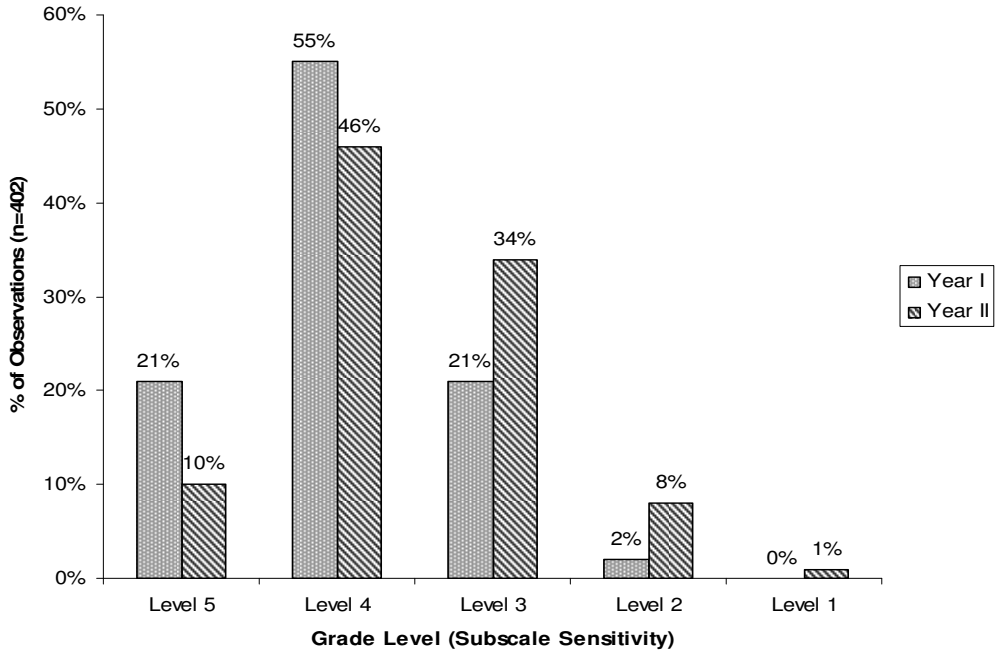


Figure 5.14: Subscale Sensitivity: Comparing Percentage of Observations at Each Grade Level, Year I and Year II

b) Subscale Stimulation

Figure 5.15 shows the variations in the stimulation sub-scale by grade levels (Level 1-5) for teachers in Year I and Year II.

In Year I, the observed percentages for grade levels from highest to lowest was: Levels 4, 3, 2, 5 and 1. In Year II, the sequence was: Levels 3, 4, 2, 5 and 1. The percentage for the grade levels 3 and 4 moved up and for the grade levels 5 and 2, it went down. This seemed to suggest that the teachers had yet to master the stimulation skills.

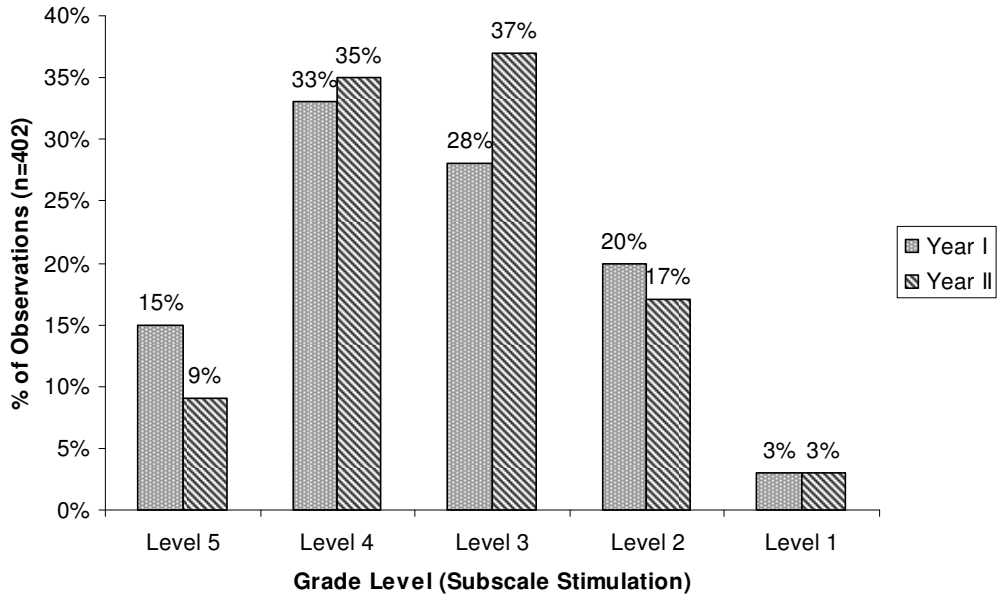


Figure 5.15: Subscale Stimulation: Comparing Percentage of Observations at Each Grade Level, Year I and Year II

c) Subscale Autonomy

Likewise while analyzing the autonomy data, a further examination was done to find out the variations in the autonomy subscale by grade levels (Level 1-5) for teachers in Year I and Year II.

Figure 5.16 shows that in Year I, the observed percentages of grade levels from highest to lowest was: Levels 3, 4, 2, 1 and 5. In Year II, the sequence was: Levels 3, 2, 4, 1 and 5. The percentage of observations for grade level 2 went up and there was a drop for the better grade levels of 3, 4 and 5. This seemed to suggest that the teachers were unable to provide autonomous learning opportunities for children in learning.

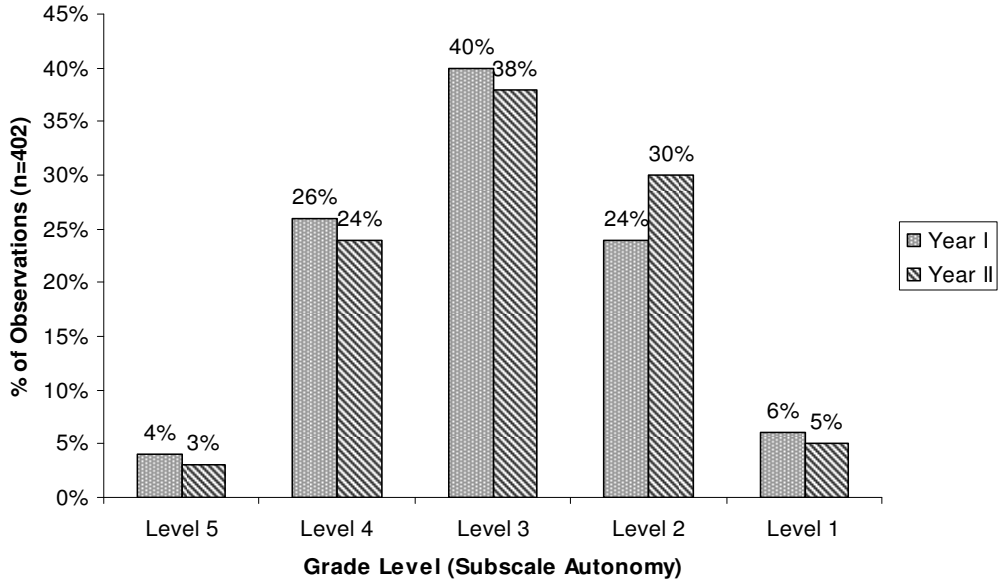


Figure 5.16: Subscale Autonomy: Comparing Percentage of Observations at Each Grade Level, Year I and Year

Table 5.13 shows the percentage of observations by subscales and at each grade level in both years. The data suggest that the teachers were less sensitive towards learners in Year II as compared to Year I. While comparing the quality of stimulation and autonomy, in Year II of the study, teachers appeared to be more able to stimulate child learning and less able to provide autonomous learning opportunities.

Table 5.13: Percentage of Observations by AE Subscales and at Each Grade Level, Year I and Year II

AE Grade Level	Sensitivity			Stimulation			Autonomy		
	Year I	Year II		Year I	Year II		Year I	Year II	
Level 5	21%	10%	(↓)	15%	9%	(↓)	4%	3%	(↓)
Level 4	55%	46%	(↓)	33%	35%	(↑)	26%	24%	(↓)
Level 3	21%	34%	(↑)	28%	37%	(↑)	40%	38%	(↓)
Level 2	2%	8%	(↑)	20%	17%	(↓)	24%	30%	(↑)
Level 1	0%	1%	(↑)	3%	3%	(0)	6%	5%	(↓)

(↑) Increase from Year I to Year II; (↓) Decrease from Year I to Year II; (0) no change

5.5.5 Findings on Relationship within Variables and between Variables

a) Ranking order of the means scores of three subscales

Among the three subscales of sensitivity, stimulation and autonomy, Figure 5.17 shows the ranking order of their mean scores in Year I from highest to lowest. The order is as follows: sensitivity, stimulation and autonomy. A similar pattern appears in Year II as well.

This finding seems to support the work done by Bertram (1996) who noted that there was a “hierarchical dependency of each on the beginning with sensitivity as a base line condition, autonomy is only possible if stimulation and sensitivity are appropriately addressed” (p.133).

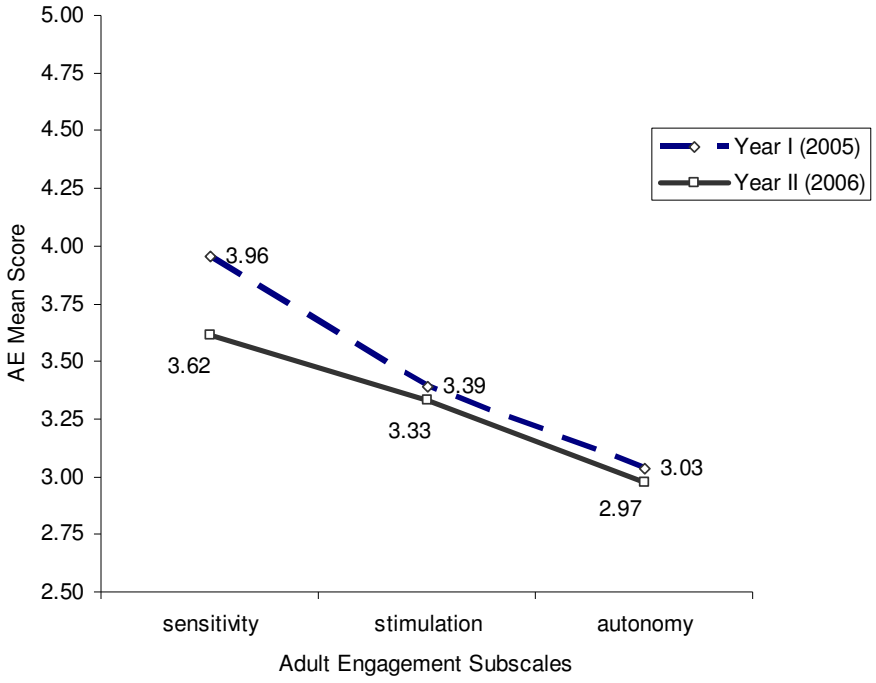


Figure 5.17: Comparing Mean Scores of Adult Engagement (AE) by its Subscales, Year I and Year II

Table 5.14 shows a decline in the overall adult engagement quality in this study. The findings show that the mean AE score (*M*=3.31, *SD*=.27) in Year II was lower than the mean AE score (*M*=3.46, *SD*=.26) in Year I.

Table 5.14: Comparing Mean Scores of Subscales, Year I and Year II

Adult Engagement (AE)	Year I (2005)			Year II (2006)			Difference in mean score
	Mean score (*M*)	*n*	SD	Mean score (*M*)	*n*	SD	
Sensitivity	3.9577	67	.43625	3.6157	67	.54587	-0.3420
Stimulation	3.3868	67	.59045	3.3321	67	.63423	-0.0547
Autonomy	3.0328	67	.48713	2.9724	67	.57449	-0.0604
Overall mean AE score of 8 centres	3.4591	67	.26798	3.3067	67	.27902	-0.1524

b) Findings on correlations among the three subscales

To measure the degree of relationship among three variables, sensitivity, stimulation and autonomy in Year I and Year II, a series of Pearson's r parametric tests of correlation were carried out.

In Year I, the results of Pearson's r parametric tests of correlation show that there was significant positive correlation (r=0.626, n=67, p<0.05) between subscales sensitivity (M =3.96, SD =.44) and stimulation (M=3.39, SD=.59); positive correlation (r=0.456, n=67, p<0.05) between sensitivity (M =3.96, SD =.44) and autonomy (M=3.03, SD=.49); and positive correlation (r=0.734, n=67, p<0.05) between stimulation (M=3.39, SD=.59) and autonomy (M=3.03, SD=.49). The results were significant at the 0.01 level (2-tailed).

In Year II, the results of Pearson's r parametric tests of correlation indicate that there was also significant positive correlation (r=0.796, n=67, p<0.05) between sensitivity (M =3.62, SD=.55) and stimulation (M=3.33, SD=.63); positive correlation (r=0.805, n=67, p<0.05) between sensitivity (M =3.62, SD=.55) and autonomy (M=2.98, SD=.57); and positive correlation (r=0.810, n=67, p<0.05) between stimulation (M=3.33, SD=.63) and autonomy (M=2.98, SD=.57). The results were significant at the 0.01 level (2-tailed).

In brief, this study revealed positive correlations among the variables sensitivity, stimulation and autonomy. However, these correlations do not imply causation among the variables.

c) Findings on correlations between adult engagement (AE) and child involvement (CI)

As described in Section 5.4.11, based on Year I data, Pearson's r test results show that there was no correlation (r=0.144, n=67, p>0.05) between AE (M=3.46, SD=.27) and CI (M=3.62, SD=.89) neither were there any

correlations (r=0.035, n=67, p>0.05) between CI and sensitivity (M=3.96, SD=.44). There was also no correlation (r=0.054, n=67, p>0.05) between CI and stimulation (M=3.39, SD=.59) and no correlation (r=0.141, n=67, p>0.05) between CI and autonomy (M=3.03, SD=.49).

However, the Pearson's r test results of Year II data show that there was a significant positive correlation (r=0.774, n=67, p<0.05) between CI (M=3.91, SD=.86) and AE (M=3.31, SD=.28). There was also significant positive correlation (r=0.326, n=67, p<0.05) between CI and sensitivity; positive correlation (r=0.335, n=67, p<0.05) between CI and stimulation and positive correlation (r=0.447, n=67, p<0.05) between CI and autonomy. The results were significant at the 0.01 level (2-tailed).

5.6 Findings on Characteristics of the Teacher's Quality

The improvement of the mean CI scores from Year I to Year II and among the participating centres had prompted me to find out what would likely be the teacher quality that had an influence on the improved child involvement levels. As mentioned in Section 5.3.2, a K-means cluster analysis was used to discover potentially three clusters of teachers with distinct characteristics with regards to the three sub-scales of teacher engagement quality.

Classification of the three clusters was based on the grade levels of the three subscales. The three clusters are: (i) Cluster 1 – under-performers; (ii) Cluster 2 – high-performers and (iii) Cluster 3 – mediocre-performers.

5.6.1 Clustering of Teachers Based on Adult Engagement Subscales

a) Subscale Sensitivity

When comparing the two years, all cluster groups of teachers were more sensitive towards the children's learning in Year I than Year II (Figure 5.18). Among the three clusters, the high-performers were the most sensitive teachers as the mean sensitivity scores in both years were the highest among the subscales.

The mean sensitivity score among the high-performing teachers was higher in Year I (*M*=4.14) than in Year II (*M*=4.10). For the cluster of under-performing teachers, the sensitivity score was also higher in Year I (*M*=3.21) than Year II (*M*=2.98). Likewise for the cluster of mediocre-performing teachers, the sensitivity score dropped from Year I (*M*=3.90) to Year II (*M*=3.67).

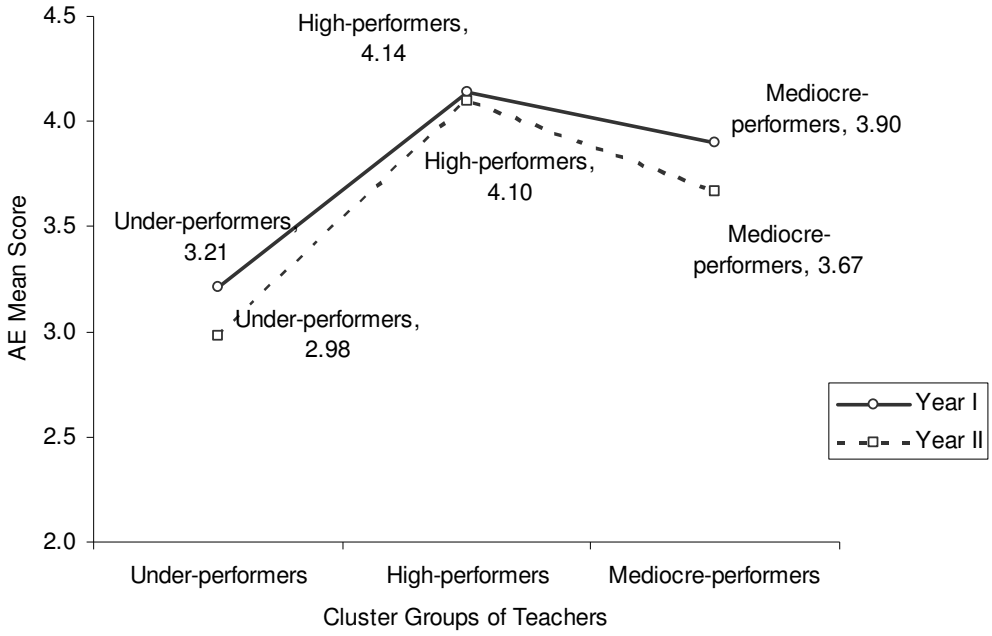


Figure 5.18: Comparing Mean Scores of Subscale Sensitivity by Clusters, Year I and Year II

b) Subscale Stimulation

Compared to Year I, all cluster groups of teachers were better in stimulating children's learning in Year II as the mean stimulation scores among the three clusters had increased from Year I to Year II. The mean stimulation scores among the high-performing teachers had a slight increase from Year I (*M*=3.94) to Year II (*M*=4.01). For the cluster of under-performing teachers, the mean stimulation score was below the grade level of 3.0 in both years. For the cluster of mediocre-performing teachers, the mean stimulation score noted a marginal increase from Year I (*M*=3.17) to Year II (*M*=3.18).

Figure 5.19 seemed to suggest that the cluster of under-performers had demonstrated an effort to improve their stimulation skills. The line chart shows that all clusters of teachers had performed better on the attribute of stimulation in Year II.

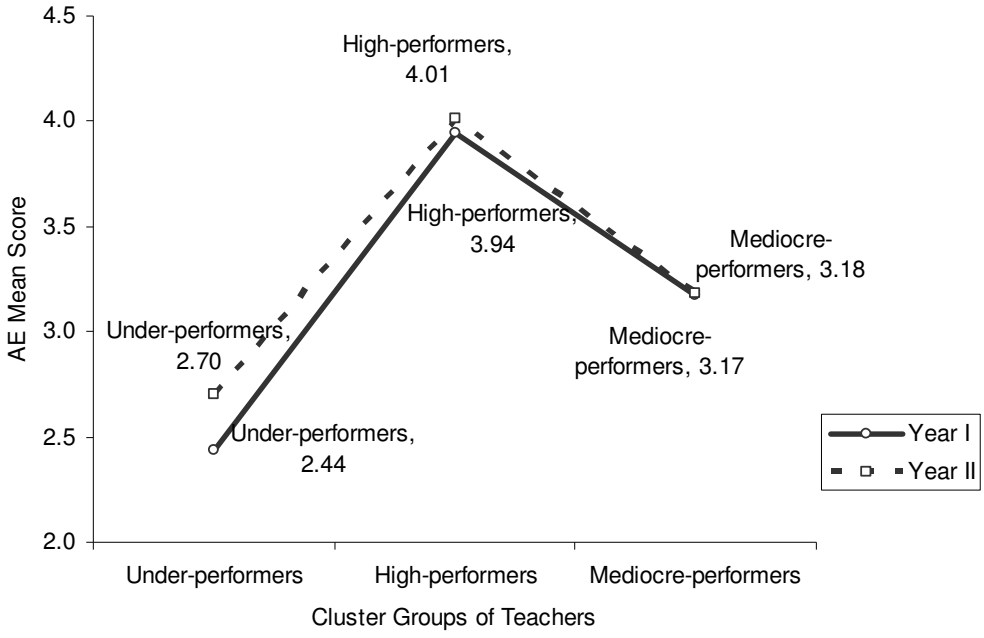


Figure 5.19: Comparing Mean Scores of Subscale Stimulation by Clusters, Year I and Year II

c) Subscale Autonomy

The mean autonomy score among the high-performing teachers was higher in Year II (*M*=3.56) than Year I (*M*=3.47). The under-performing teachers had their mean autonomy score below the grade level of 3.0 in both years. It was also noted a decrease in scores among the under-performers from Year I to Year II. The cluster of mediocre-performers also had their mean autonomy score below the grade level of 3.0 in both years. However, it was noted an increase from Year I (*M*=2.81) to Year II (*M*=2.93).

In terms of quality of autonomy, Figure 5.20 shows that the high-performers and mediocre-performers displayed better results in Year II as compared to Year I. The under-performers did worse in giving children autonomy in learning in Year II.

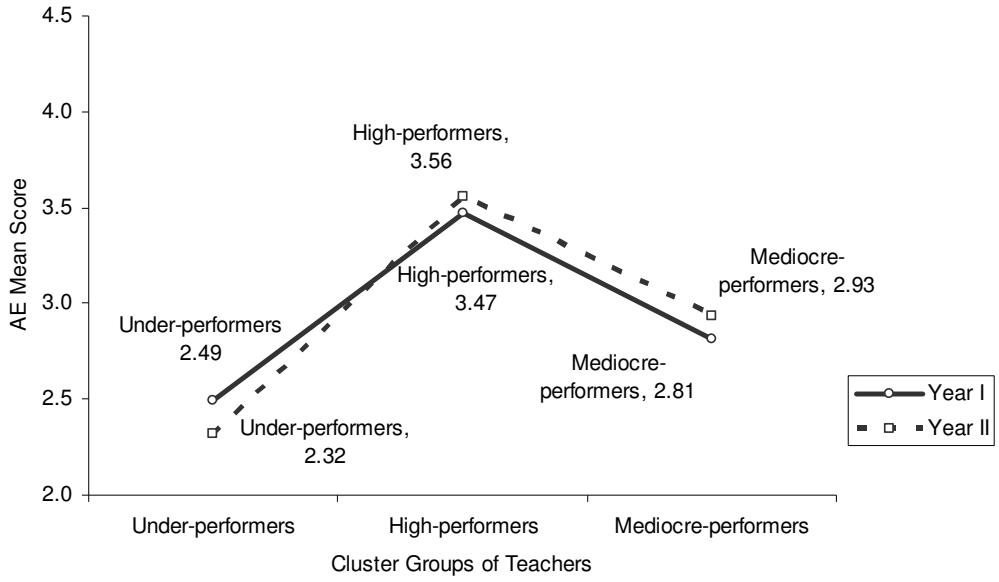


Figure 5.20: Comparing Mean Scores of Subscale Autonomy by Clusters, Year I and Year II

Table 5.15 shows the changing number of teachers in each cluster over the two years study period. From Year I to Year II, the number of under-performing teachers went up from 8 to 20 teachers, the high-performing teachers went down by 2 and the mediocre-performing teachers reduced from 33 to 23. These changes in number seemed to imply that there was no or little improvement on e toverall adult engagement quality after the implementation of a self-evaluation and development framework. However, looking at the mean scores of each individual subscale, we could notice an improvement on subscale stimulation among the three clusters. We could also see an improvement on subscale autonomy among the high performing group and mediocre-performing group.

Table 5.15: Comparing Mean Scores of AE Subscales by Clusters, Year I and Year II

Adult Engagement (Subscale)	Performers Cluster (n=67)					
	Cluster 1 Under-performers		Cluster 2 High-performers		Cluster 3 Mediocre-performers	
	Year I	Year II	Year I	Year II	Year I	Year II
Sensitivity	3.21	2.98 (↓)	4.14	4.10 (↓)	3.90	3.67 (↓)
Stimulation	2.44	2.70 (↑)	3.94	4.01 (↑)	3.17	3.18 (↑)
Autonomy	2.49	2.32 (↓)	3.47	3.56 (↑)	2.81	2.93 (↑)
No of teachers	8	20 (↑)	26	24 (↓)	33	23 (↓)

(↑) Increase from Year I to Year II; (↓) Decrease from Year I to Year II; (o) No change

5.6.2 Characteristics of Teachers by Clusters

Clusters were also analysed on variables, such as age group, number of years of working experience in early settings, educational and professional qualifications. This is to find out if there were any specific characteristic features of teachers in each cluster. In the following sections, a series of

tables summarise the characteristics of the teacher participants in each of the three clusters.

a) Age group

In general, most under-performers in cluster 1 were in their 40's, the high-performers in cluster 2 were in their 30's and the mediocre-performers of cluster 3 noted a higher proportion in their 40's. There was not much distinction among the clusters in terms of age profile (Table 5.16).

Table 5.16: Age Profile of Teacher Participants by Clusters

Age group	Cluster 1 Under performers *(n=8)*	Cluster 2 High performers *(n=26)*	Cluster 3 Mediocre- performers *(n=33)*
≥50 years	12.5%	15.4%	12.2%
40's	75.0%	26.9%	42.4%
30's	12.5%	42.3%	21.2%
20's	0%	15.4%	24.2%
≤ 20 years	0%	0%	0%
	100%	100%	100%

N=67

b) Number of years of working experience in early childhood settings

Table 5.17 shows that majority (75 percent) of the under-performers in cluster 1 had worked in the early setting between 5 and 9 years. The high-performers in cluster 2 had shown a wider range of years working in early childhood settings. About 42 percent had 5-9 years of experience, 30 percent had fewer than 5 years working in early childhood settings. As for the mediocre-performers, about half of them (54.5 percent) had fewer than 5 years' experience in the early childhood field.

This seemed to imply that number of years of early childhood experience might not be a key factor impacting the quality of adult engagement.

Table 5.17: Year of ECE Experience of Teacher Participants by Clusters

Age group	Cluster 1 Under performers *(n=8)*	Cluster 2 High performers *(n=26)*	Cluster 3 Mediocre- performers *(n=33)*
≥20 years	12.5%	3.8%	0%
15-19 years	0%	7.7%	12.1%
10-14 years	0%	15.4%	15.2%
5-9 years	75.0%	42.3%	18.2%
≤ 4 years	12.5%	30.8%	54.5%
	100%	100%	100%

N=67

c) Academic qualifications

In Singapore, a pre-school teacher is required to obtain at least three GCE 'O' level credits including English Language. In cluster 1 (Table 5.18), about two thirds (62.5 percent) of the under-performers had only 'O' level qualifications and some of them (12.5 percent) did not possess the minimum required academic qualifications.

In Cluster 2, about 50 percent of the high-performers had completed the GCE 'O' level examination and another 50 percent had better qualifications at the GCE 'A' level, diploma or degree levels. No teachers in this cluster group failed their GCE 'O' level examinations.

In cluster 3, more than three quarters (78.8 percent) of the mediocre-performers possessed at least GCE 'O' level qualifications, with a small percentage having a higher qualification (12.1 percent) and a small percentage (9.1 percent) failing the minimum standard of a GCE 'O' level qualification.

The academic qualification profiles of the clusters seemed to reveal that adult engagement quality was associated with academic qualifications.

Table 5.18: Academic Qualifications of Teacher Participants by Clusters

Age group	Cluster 1 Under performers *(n=8)*	Cluster 2 High performers *(n=26)*	Cluster 3 Mediocre- performers *(n=33)*
Degree level	0%	19.2%	9.1%
Diploma level	25.0%	15.4%	3.0%
GCE 'A' level	0%	15.4%	0%
GCE 'O' level	62.5%	50.0%	78.8%
Below 'O' level	12,5%	0%	9.1%
	100%	100%	100%

N=67

d) English Language Grade at GCE 'O' Level

As stated in Section 1.2.2.3 (c), Chapter I, before January 2013, the pre-requisite for a pre-school teacher is 3'O' GCE level credits, including at least a C6 grade in English Language. Though the main medium of instruction in pre-schools in Singapore is English Language, among the three clusters of teachers, there were some teachers who failed their English Language at GCE 'O' level examinations.

Referring to Table 5.19, in Cluster 1 of under-performers, half of the teachers (50 percent) failed in their English Language at GCE 'O' examinations. The other half of them had their English language scores between B3 and C6. In Cluster 2, about three quarters (76.8 percent) of the high-performing teachers scored Cs and above for their English Language subject. Among these high-performing teachers, more teachers (38.4 percent) scored As and Bs as compared to the teachers in the other clusters. In cluster 3, though about 90% of the mediocre-performing teachers had credits in English Langauge,

their scores were in the scores of Cs. A small number scored Bs and none of the mediocre-performers scored As.

This seemed to imply that English Language scores may have some association with the adult engagement level.

Table 5.19: Credit in English Language (EL) at GCE 'O' Level of Teacher Participants by Clusters

EL grade at GCE 'O' Exams	Cluster 1 Under performers *(n=8)*	Cluster 2 High performers *(n=26)*	Cluster 3 Mediocre- performers *(n=33)*
A1 – A2	0%	3.8%	0%
B3 – B4	12.5%	34.6%	12.1%
C5 – C6	37.5%	38.4%	69.7%
Failed in EL	50.0%	23.2%	18.2%
	100%	100%	100%

N=67

e) Number of credits at GCE 'O' level

In Singapore, a pre-school teacher is required to obtain at least three 'O' level credits including English Language. In cluster 1 (Table 5.20), among the under-performers, 87.5 percent scored 3 to 6 'O' level credits and 12.5 percent had fewer than 3 'O' level credits. No teachers in this cluster obtained more than 6 'O' level credits In Cluster 2, all the high-performers had at least 3 'O' level credits. Among these high-performers, one quarter had obtained 7 or 8 'O' level credits. In Cluster 3 of mediocre-performers, about 90 percent had 3-6 GCE 'O' credits and 9 percent did not obtain 3 'O' level credits.

Table 5.20: Number of GCE 'O' Credits of Teacher Participants by Clusters

No of GCE 'O' credits	Cluster 1 Under performers *(n=8)*	Cluster 2 High performers *(n=26)*	Cluster 3 Mediocre- performers *(n=33)*
≥ 8 'O'	0%	7.6%	3.0%
7 'O'	0%	15.4%	3.0%
6 'O'	25.0%	15.4%	21.0%
5 'O'	12.5%	15.4%	3.0%
4 'O'	25.0%	19.2%	39.4%
3 'O'	25.0%	26.9%	21.2%
≤ 2 'O'	12.5%	0%	9.0%
	100%	100%	100%

N=67

f) Professional qualifications

Currently in Singapore, a pre-school teacher is required to obtain at least a certificate in pre-school education. As stated in Section 1.2.2.3 (c), Chapter I, from January 2013, all teachers must attain a diploma in pre-school education. Comparing to teachers in cluster 2 (65.4 percent) and cluster 3 (57.5 percent), cluster 1 had a lower percentage (50 percent) of teachers who were diploma or degree holders.

Referring to the teachers who were undergoing training or untrained at the point of the study period, cluster 1 and cluster 3 had higher percentage of teachers in this category as compared to cluster 2 (Table 5.21).

This seemed to imply that there might be a link between adult engagement level and professional qualifications of teachers.

Table 5.21: Professional Qualifications of Teacher Participants by Clusters

Professional Training	Cluster 1 Under-performers *(n=8)*	Cluster 2 High- performers *(n=26)*	Cluster 3 Mediocre- performers *(n=33)*
ECE degree	12.5%	15.4%	3.0%
DPE	37.5%	50.0%	54.5%
CPT	25.0%	23.1%	15.3%
Untrained / undergoing training	25.0%	11.5%	27.2%
	100%	100%	100%

N=67

g) Section summary

In summary, cluster analysis shows that the under-performers of cluster 1 were generally in their 40's with majority worked between 5 and 9 years in early settings. Many under-performers had only 'O' level qualifications. Among them, majority had 3 to 6 credits and some had not met the minimum GCE'O' standards. Also, half did not have a credit in their English Language which is the language of instruction in pre-schools.

On the other hand, most of the high-performers of Cluster 2 were in their 30's with mostly worked in the pre-school field fewer than 10 years. In terms of academic qualifications, majority had professional qualifications of early childhood diplomas or degrees. They also had more GCE 'O' credits and many had higher qualifications. They scored well in their English Language at the GCE 'O' levels.

In cluster 3, most mediocre-performers were in their 40's. More than half had fewer than 5 years experience in early childhood field. Majority were GCE 'O' level holders. Most of them had 3-5 GCE 'O' credits with their English Language scored C5 or C6. Most of them acquired early childhood education

certificate with a small percentage of them attained a diploma in early childhood education.

The above data analysis seemed to suggest that adult engagement quality may have a link with professional training status and education qualifications.

5.6.3 Summary of Findings on Adult Engagement (AE)

In brief, in this study, the quantitative analysis on adult engagement (AE) has resulted in the following findings:

a) There was a significant difference between teachers in Year I and Year II in terms of adult engagement.

b) There were also significant differences between teachers in Year I and Year II in terms of adult engagement subscales: sensitivity, stimulation and autonomy.

c) The ranking order of the mean scores of the three sub-scales from highest to lowest had been consistent in both years: sensitivity, stimulation and autonomy.

d) There was a declining trend in the overall mean scores of adult engagement and the three subscales from Year I to Year II.

e) There were significant correlations between sensitivity and stimulation; sensitivity and autonomy; and stimulation and autonomy.

f) There was no significant correlation between adult engagement and child involvement in Year I of the study. However, in Year II, the

study revealed a significant positive correlation between these two variables.

g) A cluster analysis shows that the high-performing teachers had better academic qualifications and professional training. They also had attained better academic results and were more proficient in English Language. The under-performing teachers had generally lower academic qualifications and professional standards. They were less proficient in the English Language. These may have impacted their performance in terms of adult engagement quality.

These findings have provided substantial evidence to answer the other primary research question:

"In what ways, if any, would the adoption of a self-evaluation and development framework improve the level of adult engagement in the selected pre-schools?"

The above quantitative analysis has shown that the introduction of a self-evaluation framework had some impact on the adult engagement (AE) in the participating centres. However, the declining trends of the adult engagement quality had prompted me to seek for possible limiting factors that might have caused the phenomenon. Detailed elaboration of the possible factors are described in Chapter VI and Chapter VII.

5.7 CHAPTER SUMMARY

In summary, the findings in this study revealed that there were child involvement differences before and after the implementation of a self-evaluation and development framework in these participating centres. The differences were also found when children were at learning activities related to specific content areas and at various settings.

In terms of adult engagement, this study revealed that the interactive quality of teachers with children had declined after the implementation of a self-evaluation and development framework. This phenomenon is commonly noticed when a new initiative is introduced to a setting. This will be discussed in Chapter VI and Chapter VII.

The findings also provided some insights for fine-tuning teaching methods with the purpose of yielding higher involvement levels when managing children of different genders, age groups and at different settings. The findings on cluster grouping with the profile of different clusters of teacher performers might shed some insights on the efforts put in by the practitioners to develop their style of engagement that had resulted in higher child involvement levels. In addition, this study revealed the importance of a learning environment on child involvement and adult engagement as the findings indicated a positive relationship between child involvement and early learning environment.

In summary, the findings stated in this chapter have provided data-based evidence to answer the two primary research questions. Additional evidence from the qualitative data would also be used to substantiate these findings. The analysis of qualitative data are described in the individual centres' reports in the next chapter.

CHAPTER VI
CENTRES' REPORTS AND FINDINGS

6.1 INTRODUCTION

This chapter provides the centres' reports that examine phase by phase the journey of each pre-school that went through the self-assessment and development cycle.

To implement the self-evaluation and development framework, each centre started its self-evaluation by gathering baseline data on the quality of its learning environments by having teachers observe and assess the quality of child involvement levels and by having principals and external assessors evaluate the quality of teacher interaction with their children. The ultimate goal of implementing a self-evaluation and development process was to provide quality learning for young children. To achieve the long-term goal, this study demonstrated how the eight participating pre-schools completed an evaluation cycle consisting of four phases: self-evaluation, action-planning, improvement and reflection.

Following the self-evaluation phase, the profiles of child involvement, adult engagement and environmental ratings were analysed. The findings were then used to support the centre's assessment in identifying the domains needed improvement. These domains are categorized into seven sub-domains by the ECERS system, i.e. space & furnishings, personal care and routines, language reasoning, activities, interaction, programme structure and

parents & staff. Subsequently, improvement plans were drawn up by the individual centres for implementation.

In the second year of the study period, all centres took action to implement their improvement plans. At this implementation phase, the principals and teachers continued to use the Child Involvement Scale and Adult Engagement Scale to quantify their observations and determine if their efforts had yielded positive results.

At the reflection stage of the cycle, the principals and teachers shared their experiences using the reflection logs, focusing on how the framework impacted their capabilities and the skills that they might have acquired through the self-evaluation process.

The following section elaborates on the four phases of the cycle. The quantitative and qualitative data that were collected in the process were analysed, aiming to answer the secondary research questions stated in Chapter I as follows:

> *(i) In what ways, if any, would the adoption of a self-evaluation and development framework help enhance teachers' capabilities and skills in the selected pre-schools?*
>
> *(ii) In what ways, if any, would the adoption of a self-evaluation and development framework help improve leaders' capabilities and skills, and in turn help effect organisational change in the selected pre-schools?*

6.2 CENTRES' REPORTS: CENTRE A AND CENTRE B

6.2.1 The Study Setting

a) Location

Centre A and Centre B are community-based kindergartens that are situated at the void decks of three-room flats. They are one kilometre apart. These two centres were managed by a branch administrator who was also the principal for these centres. This discussion presents the processes of the two centres together.

Both centres are situated in an old and established housing estate with a higher proportion of mature and senior residents. Student enrolment has declined over the last few years.

b) Enrolment and staffing

In 2005, Centre A had about 200 children forming four classes in the morning and three in the afternoon. There were 6 teachers in this centre. Centre B had 90 children with 3 teaching staff. This was the smallest student population among the selected pre-schools in the study. The administration office stated that most of the children were from the families belonging to the lower and middle income categories living in the nearby 3- or 4-room flats. In most cases, their parents or grandparents walked the children to the centres.

Due to decreasing number of class groups, two unqualified teachers were asked to leave the centres at the end of 2005. With fewer class groups, only one new teacher was employed in 2006. There was also a staff re-organisation between the centres in 2006. A senior and experienced teacher was transferred from Centre A to Centre B. On average, the teacher-student ratio was 1 in 20.

c) Operation and facilities

The monthly school fees were very affordable (Table 5.1) as compared to the other types of pre-schools in Singapore. These centres ran two sessions a day, four hours per session. Morning classes were held from 8 am to 12 noon and afternoon, from 12.30 pm to 4.30 pm. They offered programmes for Kindergarten 1 (K1), Kindergarten 2 (K2) and Nursery levels. As community-based organizations, these two centres receive Government funding for upgrading teachers' qualifications and purchasing resources.

The classrooms were well stocked with a good range of learning materials (Table 5.3). In each classroom, six to eight different learning centres were set up to support the themes identified by the teachers. Every day, children were allocated about an hour to visit these activity centres which included a dramatic corner, table toy section, worksheet corner, library, science investigation corner, block corner, and arts and crafts section. Every day, children were assigned to complete some assignment at the worksheet tables. In general, the class teacher would assign them to visit a different activity corner each week. Collar tags were used to control the number of children in each activity corner. At Centre A, some children's work was pinned up in the corridors. At Centre B, there were more commercially produced exhibits than children's work on the walls and the notice boards.

d) Leadership and management

The centres' philosophy was displayed on the walls outside their offices. It read as "We teach our children to the best of our ability with love, fun, care and discipline. We will help them succeed in life." A brochure including this philosophy was issued to all parents at the time of their child's registration.

These two centres were under the same leadership and teachers from the two centres worked closely as a team. In the first two weeks of each term vacation, the teachers would meet to plan the lesson activities for both the centres. Learning materials were used across the two centres for children at the same level. The teachers also worked together to plan field trips, outings, the yearly open house and the graduation ceremony.

The parent organization of these two centres conducted an annual quality check on all its kindergartens. There were incentive schemes to encourage centres to improve their quality standards. For Centre A and Centre B, it was also an issue of survival that prompted the centres to search for effective strategies to raise the quality and image of the centres. The student population had declined much in the last few years as the centres faced stiff competition in the neighbourhood. These two centres constantly searched for effective strategies to raise the quality of their centres, so as to increase their enrolments.

6.2.2 Cycle of Evaluation

In these centres, the research cycle began in the K1 and K2 class groups in July 2005 and was completed in November 2006. During the study period, especially at the self-evaluation phase, communication between me and the school staff was very frequent. This enabled the teachers to clarify doubts when the tools were being used, so as to avoid misinterpretation of the tools and to ensure that the child observations were completed on schedule.

6.2.2.1 Evaluation phase

a) Findings on the quality of learning environment

The centres used the Early Childhood Environmental Rating Scale (ECERS) to assess their own learning environment. Each item in the scale is given seven grading levels. The rating data of each item under the seven domains were collected to calculate a mean score for the whole setting.

A brief summary of the mean score for the seven domains for the two centres can be found in Table 6.1. In 2005, Centre A had an ECERS mean score of 4.69 and Centre B had a mean score of 3.69. Among the seven domains stated in the ECERS system, Centre A performed better than Centre B, especially in the domain of language and reasoning.

Table 6.1: ECERS & Subscale Ratings for Centre A and Centre B

Centre	Mean score	ECERS Standard	Space & Furnishing	Personal Care Routines	Language & Reasoning	Activities	Interaction	Program Structure	Parents and Staff
A	4.69	Level 4 (minimum to good standard)	4.88	6.40	5.00	4.80	4.20	3.50	3.50
B	3.69	Level 3 (minimum standard)	3.88	6.40	3.50	3.10	3.60	3.25	3.33

b) Findings on the quality of child involvement

To assess quality learning in terms of the child involvement level, participating teachers observed the children between July and September 2005. They used the Child Involvement Scale to observe at least twelve children in their class groups. Most of the teachers in these two centres

observed almost the whole class. This was because the teachers were requested to share the children' progress with the parents at the meet-the-parent sessions. These two centres intended to implement a new child progress report the following year. To support the initiative and to encourage the practice of observation, the principal hired relief teachers to assist the classroom teachers to manage their jobs, so that they could have sufficient time to complete their observation tasks.

The child involvement data of all the target children were collected and a mean score was calculated for the whole setting. In 2005, the mean child involvement score (Table 6.2) for Centre A was 3.89 and Centre B scored 3.54. Using this overall mean score as a benchmark, Centre B would be considered as an under-performer. The mean score of Centre A was slightly above the overall mean score by 0.27. As a result, the principal decided to post a senior and more experienced teacher from Centre A to Centre B to guide and mentor the inexperienced teachers in Centre B.

Table 6.2: Mean Child Involvement Scores for Centre A and Centre B, Year I

Centre	Mean score 2005	Overall mean score of 8 centres	Difference in Scores
A	3.89	3.62	+0.27
B	3.54		-0.12

c) Findings on the quality of adult engagement

The Adult Engagement Scale is used to observe and rate teachers interacting with children. The data gained shows a profile of all the teachers' facilitative style in a setting, not the assessment of individual teacher's facilitative style. The mean score of the adult engagement for all the teachers in the setting is then calculated.

The adult engagement levels of Centre A and Centre B are shown in Table 6.3. The mean score of the adult engagement for Centre A was 3.63 and for

Centre B it was 3.46. Centre A and Centre B performed better than the overall mean score of 3.459 in terms of adult engagement quality.

Table 6.3: Mean Adult Engagement Scores for Centre A and Centre B, Year I

Centre	Adult Engagement (Subscale)	Mean score 2005
A	Sensitivity	4.17
	Stimulation	3.61
	Autonomy	3.11
	Average of 3 subscales	3.63
B	Sensitivity	4.25
	Stimulation	3.33
	Autonomy	2.81
	Average of 3 subscales	3.46
Overall mean score of 8 centres	Adult Engagement Level	3.459

Table 6.3 also shows that in 2005, the teachers in these centres performed better in terms of being sensitive towards child learning as compared to providing stimulation and autonomy for child learning. The mean scores among the three attributes were in a descending order: sensitivity, stimulation and autonomy.

6.2.2.2 Action planning phase

With the 2005 data collected using the ECERS, Child Involvement Scale and Adult Engagement Scale, these two centres identified three domains they needed to look into more urgently (Table 6.4).

Table 6.4: Work Plan 2006 - Focused Domains for Improvement

Centre	Space & furni-shings	Per-sonal care & rou-tines	Language & Reason-ing	Activities	Interac-tion	Program & structure	Parents & staff
A	√			√			√
B	√			√			√

Considering the limited financial support and small number of staff in these centres, the two centres focused on three action points for improvement.

a) Action 1: to revise the child's progress report cards

In 2005, the teachers shared their observations on the children's involvement with the parents at the meet-the-parents sessions. As the feedback from the parents was very encouraging, the centres decided to work on a child progress report card that would reflect the holistic development of the child. This was because the centres realized that the existing report card did not reflect a child progess holistically, but only focused on reporting the cognitive aspect of the child's development such as "the child recognizes alphabets A-Z; numbers 1-20".

b) Action 2: to increase opportunities for child's learning of gross motor skills

While analyzing the child involvement levels against the types of activities, the 2005 profiles seemed to show that high child involvement levels were linked to physical related activities. Hence, these centres decided to incorporate learning of languages and numeracy into physical activities.

c) Action 3: to create a quiet corner in the classroom

Though there was limited space in these centres, some teachers felt that they could create quiet corners within their classrooms to allow their children to have quiet time to themselves.

6.2.2.3 Improvement phase

a) Improvement on child involvement

With the implementation of the action plan 2006, the centres scheduled the child observation exercises in September-October 2006 to collect data to ascertain if there was any improvement or not. The mean scores for the centre involvement levels in 2005 and 2006 are shown in Table 6.5. The 2006 data on child involvement levels show that both Centre A and Centre B had made an improvement.

Table 6.5 shows that Centre A demonstrated a positive trend in its child involvement profiles. Its mean score improved from 3.89 in 2005 to 4.05 in 2006. The mean child involvement scores of Centre B also improved by 0.77. Among the selected pre-schools, Centre B had the most remarkable increase. The principal thought that this could be due to her placing an experienced teacher to Centre B to guide and mentor the inexperienced teachers.

Table 6.5: Mean Child Involvement Scores for Centre A & Centre B, Year I and Year II

Centre	Mean score 2005	Mean score 2006	Difference in scores
A	3.89	4.05	+0.16
B	3.54	4.31	+0.77
Overall mean score of 8 centres	3.62	3.93	+0.31

Though these centres did not come up with explicit work plans to focus on raising the child involvement levels, some teachers took their own initiative to modify their teaching strategies and activities after observing their children. For example, quoting the field notes, a teacher (T8) shifted the construction block corner from one end of the room to the other so that children at this corner would not be interrupted by the movements of other children who were in the class. The teacher explained that by doing this, she noticed that in her class, the involvement levels of children had improved.

b) Changes in adult engagement

When using the overall mean adult engagement score 2005 as a benchmark, both Centre A and Centre B had their mean scores higher than the overall means. Likewise, in 2006, both centres had their mean scores better than the overall mean score.

However, as compared to 2005, the 2006 adult engagement mean score of Centre A had decreased by 0.07 and the mean score of Centre B had increased by 0.15 (Table 6.6).

As both centres were under the same management team, the principal commented that the possible factor could be due to the move of an experienced teacher being posted from Centre A to Centre B. In 2005, the principal noted that the mean score of adult engagement of Centre B was below the overall mean score, she persuaded an experienced teacher to be posted to Centre B. This deployment seemed to have worked as Centre B scored a higher adult engagement mean score in 2006 as compared to that of 2005. However, the quality of adult engagement in Centre A seemed to be adversely affected.

Among the mean scores of three attributes of adult engagement in Centre A, the data showed a clear improvement in stimulation. In Centre B, an

improvement was shown in subscales of stimulation and autonomy. For example, a field note described that a teacher (T3) in Centre B made an effort to improve child learning by creating a hair-dressing salon corner when she noticed that some children in her class were interested in doing up the hair of their dolls.

Table 6.6: Mean Adult Engagement Scores for Centre A & Centre B, Year I and Year II

Centre	Adult Engagement (subscale)	Mean score 2005	Mean score 2006	Difference in scores
A	Sensitivity	4.17	3.94	-0.21
	Stimulation	3.61	3.69	+0.08
	Autonomy	3.11	3.05	-0.06
	Average of 3 subscales	3.63	3.56	-0.07
B	Sensitivity	4.25	3.93	-0.36
	Stimulation	3.33	3.62	+0.29
	Autonomy	2.81	3.31	+0.50
	Average of 3 subscales	3.46	3.62	+0.15
Overall mean score of 8 centres	Adult Engagement	3.46	3.31	-0.15

c) Raising the professional image of teachers

These two centres made use of what they learnt from the Child Involvement Scale as an input to re-design a new progress report format for their children. The teachers used a 5-point scale to observe and assess a child's learning in the following domains: literacy, numeracy, self awareness, motor skills, arts and craft, and music and movement. This new progress card included observable evidence of a child's progress. Parents at the meet-the-parents sessions in 2006 praised the teachers very much as they realized how much time and professional effort the teachers each put in to understand their child. The principal commented that "the teachers were very happy as

they had impressed parents by their detailed observation of child learning on the six learning domains. They told me that their hard work had paid off."

A senior member staff was very proud of their effort in designing the new progress report format. This innovative practice was shared with other pre-schools at one of the MOE sharing sessions in 2006. She (T2) commented that "when I approached one of my parents to come and share with other pre-school leaders at the MOE learning journey event, she had no hesitation, but agreed despite having to take time off from her office. This is a confirmation of the leadership of the centres in making such a change that has created a positive impact on the centres."

The senior staff member continued to say that "parents welcomed [it] and [they] were impressed with the findings. They are now more confident with the centres and the teachers." Obviously, the staff had created a positive image for their centres and had improved their communications and relationships with the parents.

d) Modification on the programmes

To increase opportunities for children's learning of gross motor-skills, the centres re-looked at their time-tables and revised the weekly lesson activities for different class groups. This was done to ensure that there would be an increase in motor skills-related activities for children. Some lesson activities were revised to incorporate three learning areas into a lesson activity. One observation noted that a teacher incorporated language activities into physical movement. She took her class children to the void deck and invited them to mime the shapes of the letters A, B and C using their bodies.

e) Changes made to learning environment

To create a cosy corner was not possible in all classrooms. Two classrooms with a larger room size had a small quiet corner cordoned off. With the space constraint, many classrooms were too small to accommodate a quiet corner. However, to enhance child involvement levels, a teacher (T1) relocated the block corner to a more suitable place and another teacher (T3) created a hair salon at the drama corner.

6.2.2.4. Reflection phase

a) Managing resistance

As mentioned in Section 6.2.2.3, Centre A had a decrease in its mean adult engagement score in 2006. Resistance to change could be the cause. The principal had informal talks with some teachers. On feedback to me, she (T6) said that "the response from the teachers was not at all positive as some of the teachers find it difficult to use the child involvement scale. Nevertheless, I managed to convince them and guide them along by rendering help."

At the end of the journey, a senior staff (T5) commented that she was surprised at the positive attitude of most teachers while using the evaluation tools. After the initial trial on using the Child Involvement Scale, the teachers were convinced that the tool was user-friendly and it helped them recognize the signs of learning behaviour in a target child.

b) Changing attitude and beliefs

In 2005 and 2006, there were four teachers in these centres undergoing professional training courses. They were enthusiastic about the

new initiative as they recognised that the observation exercises allowed them to understand the learning behaviors of each target child as never before. As a teacher (T9) put it, "I was not aware that Joel has this talent."

Two other teachers (T7, T8) felt that some of their teachers were more open to change and were willing to try new ideas, new strategies and new techniques in the classrooms when developing learning activities.

In a discussion with a teacher (T4), she said that "my thinking has definitely changed as the Child Involvement Scale is linked directly to children's exploratory drive and captures the level of concentration and motivation and these are definitely unable to be achieved through the old method of progress records."

In addition, a teacher (T2) put it on her reflection log that "I would carry on with the child involvement scale as it is effective, only using it differently to accommodate different situations and children when necessary. Presently, I am happy using it as it is."

c) Improving teachers' capabilities and skills

Throughout the data collection period, a number of episodes were recorded where teachers gained particular skills. Three teachers (T3, T4, T7) felt that their professional image was enhanced. They felt that they were more competent and more confident in sharing their observational evidence with the parents. They said that they were "empowered". They made changes when they noted behavioural cues from children, such as, for example, when the teacher (T2) created a hair salon in the class to stimulate more learning.

After attending the workshops, some teachers were more aware of what to say to children in order to create quality interactions. In one observation of a group of rowdy children I was observing, I noticed that instead of the teacher (T6) raising her voice to shout "quiet" to the class, she targeted the noisy

children by saying, "The noise you are making is disturbing us. Is there a way you can work so that we won't hear you?' This method of expression enabled children to sense that the teacher disapproved of their behaviour but, at the same time, the suggestion allowed the children to think of a way to resolve their problem.

Another teacher (T4) also noticed a difference in the classrooms when teachers were interacting with children. She said that "the teachers are now more aware of the choice of words and the way they communicate with the children [as these] have an impact on their learning. As such, more teachers have adopted questioning as a way to expand children's thinking and learning."

6.3 CENTRES' REPORTS: CENTRE C AND CENTRE D

6.3.1 The Study Setting

a) Location

Centre C and Centre D are located at the void deck of three to five room housing flats in a densely populated housing estate. They are community-based non-profit making centres. These two centres are about 3 kilometres apart. Administratively, they are managed by one branch office.

b) Enrolment and staffing

Centre C had the highest pupil population among the sample pre-schools in this study. In 2005, there were 400 pupils with 22 teaching staff. Centre D had 220 pupils with 11 teaching staff. Some were part time staff. The class size was relatively large. The principals reported that the child-teacher ratio of their centres was about 25:1 in their K1 and K2 class groups.

Among the children in these centres, 55 percent were Chinese, 35 percent Malay, 5 percent Indian and the remainder was from different minority groups. To cater to the demand, Centre C offered three mother tongue languages besides the English language which was the medium of instruction.

c) Operation and facilities

Both centres conducted two sessions. The morning session started at 8 am and ended at 12 noon, and the afternoon session operated between 1 pm and 5 pm. Teachers made use of the one hour break to have lunch and run personal errands. The monthly fees (Table 5.1) per child were relatively low compared to pre-schools run by other types of organisations.

These two centres had limited space. In 2005 and 2006, one classroom was occupied by two class groups. While one class group was having an indoor activity, the other group would be having outdoor activities. When one class group was taking their snack, the other group would be having lessons in the home room. When one group had the mother-tongue lesson in a special language room, the other class group would be learning English in the home room.

In each classroom, the teachers had created an average of 6 activity centres, namely home corner, manipulatives/table toy section, worksheet area, reading corner, science corner, big construction block corner and arts and crafts area. In addition, these two centres had created a specialised room for computer-related activities. K1 and K2 children were organised to attend weekly IT related lessons taught by a computer trained teacher.

d) Leadership and management

In these two centres, the objectives of the programme were printed on the brochure for parents. There are three objectives stated as follows:

i. to create a warm and positive learning environment;
ii. to foster positive learning attitudes towards continuous life-long learning; and
iii. to build up respect for self, others and the community.

The branch administrator managed and took charge of a few pre-schools within the estate, including Centre C and Centre D. Each centre was led by a principal. Under the same branch head, their directions and programme focuses were very similar. The teaching staff of the two centres met once a semester to develop the learning themes and weekly lesson activities. Teacher-directed learning was evident in many classes in these centres.

Children were frequently given worksheets to complete in the classrooms as this was perceived to be a good way to reinforce what they learnt in that particular week. Children in groups were rotated daily to the worksheet tables to complete their assignment. Children who completed their assignment could visit the activity corners though, on most occasions, children were assigned to visit specific activity corners after they had completed their assignments.

These centres received funding from the Government to upgrade their teachers' qualifications and to increase their centres' resources. In 2005, Centre D appointed a new principal who was undergoing training under the Diploma Course in Teaching and Leadership. In 2006, there was also a re-organisation of the senior staff among the centres. The management board of these centres was very supportive of teachers' professional development. In 2005 and 2006, three senior teachers were sponsored to take up the under-graduate and post-graduate courses in early childhood education. This shows that the management board was keen on raising the quality standards of these centres. Under this pressure, the centres were actively looking for ways to improve their quality standards.

6.3.2 Cycle of Evaluation

6.3.2.1 Evaluation phase

The self-evaluation procedures for the two centres were similar. The teachers in each centre spent about 4 weeks during September-October 2005 to complete their class observation of child involvement levels. The adult engagement tool was also used to rate the quality of all teachers' level of quality interaction with their children. Environmental rating was done and the external validation exercise was carried out in October 2005. With a large teaching staff in these two centres, the feedback session on the preliminary findings was organised for only the senior staff. This feedback and the

assessment results were shared with their teachers at a subsequent staff meetings.

a) Findings on the quality of learning environment

At the initial stage, self-evaluation exercises were carried out using the ECERS tool. Table 6.7 shows the 2005 environmental rating profiles of Centre C and Centre D. Centre C had a mean ECERS score of 4.00 whereas Centre D had a mean score of 3.59. Both centres met the minimum quality standard of Level 3 in the ECERS system. Besides the sub-domain of Programme Structure, Centre C did better than Centre D in all the other six sub-domains.

Table 6.7: ECERS and Sub-Scale Ratings for Centre C and Centre D

Centre	Mean score	ECERS Standard	Space & Furni-shing	Perso-nal Care Rou-tines	Langua -ge & Reaso-ning	Acti vi-ties	Inte-rac-tion	Pro-gram Struc-ture	Pa-rents and Staff
C	4.00	Level 4 – (minimum to good standard)	3.75	6.00	4.50	3.80	3.80	2.50	3.67
D	3.59	Level 3 – minimum standard	3.66	5.00	4.00	3.00	3.40	2.75	3.33

b) Findings on the quality of child involvement

In both centres, C and D, all teacher participants scheduled their child observation work between September-October 2005. They observed twelve children in their class groups using the Child Involvement forms to rate each child's behaviour and actions. The 2005 child involvement profiles (Table 6.8) show that Centre C scored 3.46 and Centre D scored 3.72. Centre C

performed poorer than the overall mean score of 3.62 whereas Centre D scored above the overall mean score.

Table 6.8: Mean Child Involvement Scores for Centre C and Centre D, Year I

Centre	Mean score 2005	Overall mean score of 8 centres	Difference in Scores
C	3.46	3.62	-0.16
D	3.72		+0.10

c) Findings on the quality of adult engagement

The principals, the branch administrator and I observed how the teachers interacted with their children. The 2005 data shows a profile of the teachers' interaction styles. Table 6.9 shows the mean adult engagement scores for Centre C was 3.10 and for Centre D, it was 3.24. In 2005, both centres' performances on the adult engagement levels were below the overall mean score of 3.46. While examining the three attributes found among the teacher-child interaction patterns, the trends on the scores in both centres were similar. The sequence from highest to lowest was: sensitivity, stimulation and autonomy.

Table 6.9: Mean Adult Engagement Scores for Centre C and Centre D, Year I

Centre	Adult Engagement (Subscale)	Mean score
C	Sensitivity	3.65
	Stimulation	2.96
	Autonomy	2.71
	Average of 3 subscales	3.10
D	Sensitivity	3.66
	Stimulation	3.23
	Autonomy	2.83
	Average of 3 subscales	3.24
Overall mean score of 8 centres	Adult Engagement Level	3.46

6.3.2.2 Action planning phase

With the data collected in 2005 using the Early Childhood Environmental Rating Scale, the Child Involvement Scale and the Adult Engagement Scale, these two centres identified their strengths and weaknesses for their action planning. Though each centre was unique in its staffing composition and physical settings, they were under the same administration and management team. Hence, these two centres decided that on top of the different plans each centre had, they would look into two domain areas for improvement in 2006 (Table 6.10).

Table 6.10: Work Plan 2006 - Focussed Domains for Improvement

Centre	Space & furni-shings	Personal care routines	Langua-ge & reason-ning	Activities	Interaction	Pro-gram struc-ture	Pa-rents & staff
C				√	√		
D				√	√		

Within each domain area, these centres focused on the following action points for improvement.

a) Action 1: to build teachers' capability and skills in teacher-child interaction

These centres recognised the importance of teacher-child interaction for effective learning. They also acknowledged that their teachers lacked the necessary skills in using appropriate language and words while interacting with young children. A training course was then proposed for teachers in 2006.

b) Action 2: to increase opportunities for children to have more physical exercise

The child involvement profiles of the two centres show that high child involvement levels were associated with outdoor games and related physical activities. Hence, the centres planned to review their lesson activities to incorporate motor-skills related activities into the learning areas of numeracy, literacy and self-awareness.

6.3.2.3 Improvement phase

a) Improvement on child involvement

With the implementation of the two action points, the teachers conducted their second round of child observation exercises in August-September 2006. Table 6.11 shows the changes in their centre's mean child involvement scores in 2005 and 2006. Centre C had its mean child involvement score of 3.46 in 2005 and had improved in 2006 with a score of 3.63. The mean score of Centre D had noted a decline by 0.05 from a score of 3.72 in 2005 to 3.67 in 2006. When comparing their mean scores with the overall mean score, these two centres did not perform as well as some other participating centres in relation to child involvement.

Table 6.11: Mean Child involvement Scores for Centre C & Centre D, Year I and Year II

Centre	Mean score 2005	Mean score 2006	Difference in Scores
C	3.46	3.63	+0.17
D	3.72	3.67	-0.05
Overall mean score of 8 centres	3.62	3.93	+0.31

b) Changes on adult engagement

In the second year of the study, the branch administrator, the principals and I carried out the observations on adult engagement between July and October 2006. The adult engagement levels over the two years are shown in Table 6.12. When comparing the mean adult engagement scores of both centres with the overall means of 2005 and 2006, Centre C and Centre D scored lower than the overall mean score. Both Centre C and Centre D demonstrated a declining trend in their mean scores from 2005 to 2006. Centre C had its mean score decreased by 0.18 and Centre D by 0.13. According to the management team, there were teachers who were resistant to implementing the framework. Some teacher observers felt hard-pressed for time.

Among the three attributes of adult engagement, the ranking sequence was similar to the pattern found in the centres A and B. The mean scores of the attribute of 'sensitivity' was better than the attributes of 'stimulation' and 'autonomy'. The lowest mean score of the three attributes was 'autonomy'.

Table 6.12: Mean Adult Engagement Scores for Centre C & Centre D, Year I and Year II

Centre	Adult Engagement (Subscale)	Mean score 2005	Mean score 2006	Difference in scores
C	Sensitivity	3.65	3.32	-0.33
	Stimulation	2.96	2.94	-0.02
	Autonomy	2.71	2.51	-0.20
	Average of 3 subscales	3.10	2.92	-0.18
D	Sensitivity	3.66	3.40	-0.26
	Stimulation	3.23	3.18	-0.05
	Autonomy	2.83	2.75	-0.08
	Average of 3 subscales	3.24	3.11	-0.13
Overall mean score of 8 centres	Adult Engagement	3.46	3.31	-0.12

6.3.2.4 Reflection phase

Centre C shows slight improvement on its mean child involvement scores from 2005 to 2006. However, these two centers showed no improvement in the mean adult engagement scores after implementing the framework. According to the principal, the management believed that the involvement in this study would help improve service standards. However, some teachers thought otherwise.

a) Managing resistance

When discussing their expectations and experiences during the implementation of the self-evaluation and development framework, the branch administrator and the principals reflected that some teachers showed less enthusiasm than others. To find out the cause, I had informal conversations with some staff. The key concerns were, namely, over higher teacher requirements set by the authorities, higher expectations from parents and higher quality standards and increasing demands set by their parent organization.

Some teacher observers needed to finish their teaching duties and accomplish their planned lesson activities. This study required them to put in extra time and effort, including sometimes using their free time to observe children. The sentiment could be summarized by a staff (T41) who said that, it was "worth the time and at the same time, time consuming. It may create anxiety when we do not meet our own expectations".

b) Attitudes toward change and self-awareness

Though there was resistance, on a reflective note, a teacher (T36) said that "at my centre, I observe that there are more sharing sessions conducted by teachers during lunch time. At interval, they share thoughts, opinions and

teaching methods to enhance children's learning. They also improve themselves through reflection to improve their teaching. She acknowledged that she "has gained additional knowledge on observation skills through [using] Child Involvement Scale, Adult Engagement Scale, Early Childhood Environmental Rating Scale and [practicing] self-appraisal".

Another teacher (T28) acknowledged that "I used to be defensive about feedback. The self-reflection process has enabled me to see things from another perspective and presented a 'true picture' of myself, my colleagues and the centres".

One other teacher (T25) claimed that "our centre has transformed almost overnight. Teachers are exposed to and equipped with the necessary tools for self-appraisals in bringing up the quality of the centre... "She noticed that "teachers have changed to believe that children of this generation are not the same as before".

c) Promoting integrated learning

Based on the action plan in 2006, the teachers reviewed their lesson plans and increased opportunities for their class groups to incorporate physical exercises with learning of other subject knowledge. Workshops were arranged by the principals in March 2006 to give teachers hands-on experience in designing integrated lesson units. At the workshops, themes like 'Money', 'Flight' and 'Garbage' were drafted. One group suggested that for the theme 'flight', they would get children to make paper airplanes, paper kites and pinwheels. They would then let children try out their own creation by going to a nearby open area to observe how well these paper airplanes, kites and pinwheels would perform. These revised lesson activities incorporated learning of numeracy, science, arts and crafts with the motor skills-focussed practices.

d) Enhancing teachers' capabilities and skills

Many teachers in these centres reflected that they have polished up their observation skills. One teacher (T24) reflected that "observation [is] not a new skill but when carrying it out gives much understanding of children's development and a whole new perspective about their style of learning."

Another teacher (T37) noticed that "the teachers are now more objective in their observations of children at work. They learned how to identify and improve on tasks that can sustain children's involvement… Teachers began to be more aware about the type of interaction they have with the children." She also noticed that "although there are no drastic changes, teachers are adopting a more interactive approach when communicating with children". She also observed that in her centre, the teachers are becoming more receptive towards suggestions to change such as setting up the classroom and the learning centres to meet the requirements recommended in ECERS".

One teacher (T33) said that "teachers began to believe that a well decorated learning centre may look impressive but it is the interaction between children and the environment that makes the difference. It has to be well provisioned to encourage exploration and of course have a sensitive teacher to orchestrate."

A more encouraging remark from a teacher (T31) was that "I feel confident and zealous to step into the New Year knowing what the things within our control are and what the areas we need to focus on more are".

6.4 CENTRE' REPORT: CENTRE E

6.4.1 The Study Setting

a) Location

Centre E is located in a densely populated housing estate in Singapore. It is housed within half a hectare of land and has two modern blocks. One is a three-story classroom block and another is a place of worship as the centre is linked to a religious organization.

b) Enrolment and staffing

In 2005, it had a pupil enrolment of 220 children who were mainly Chinese (88 percent), Indians (10 percent) and other minority groups. The centre offered two sessions a day, each with a 3-hourly learning programme: from 8.30 am to 11.30 am and 12.30 pm to 3.30 pm. Centre E collected relatively high monthly fees of $350 per child (Table 5.1). The administration office confirmed that their children were mainly from middle income families.

This centre provided transportation services for children who came from other housing estates. The administration office noted that the centre had a long waiting list as the centre was perceived as a high quality pre-school.

In 2005, the centre had 13 teaching staff, of which 30 percent were graduates in early childhood education; 38 percent, diploma holders; 15 percent, certificate holders; and two were undergoing professional training during the study period. The principal shared that their staffing situation had been stable in the last five years. She recognized that her teachers were committed and passionate about teaching though they were not paid above the market rate. Many teachers stayed back after school hours till 5.00 pm for staff meetings, level meetings and preparation of lessons and other centre-based activities.

c) Leadership and management

The centre places its emphasis on providing a supportive environment for child development and learning opportunities. The principal advocated that this centre adopts "a humanistic approach to pre-primary education." The teacher-pupil relationship was the centre's main focus. The centre's vision was displayed outside the school office: "to develop each child to be a healthy and responsible person for society". It also had the mission "to cultivate each child's individuality and potential to the fullest in the course of preparing him/her for formal school education".

d) Operation, facilities and programme

Since 2001, Centre E has adopted a project work approach to designing its curriculum programmes for child learning. The centre first adopted the project work approach with one K2 class group. With the support of the principal and two teachers, the project work approach was extended to all K2 classes the following year. With the experienced teachers as mentors, it went on to include both K1 and K2 classes in the third year. From 2004 onwards, all the teachers were eventually trained and guided by the experienced teachers to carry out the project work approach with their classes.

In every classroom, there was a good range of children's work on display. Examples include project webs, drawings, pictures, sentence writing, story writing, diagrams, charts, newspaper cuttings, photographs, models and artifacts. These were created by children or together with teachers in the process of a project. Children's work was also displayed outside the classrooms and along the corridor.

In a regular day at the centre, the teacher would start off with all children sitting in a circle. Conversations between the teacher and the children were

centred on ideas and words related to the theme and topics of the project work. The teachers would write the ideas and words from the children on a butcher sheet in a form of a web. These sheets were later posted on the wall.

In every classroom, 5 to 6 different learning corners were specifically created to tie in with the project theme and its related topics. These activity corners served to extend children's learning.

An interesting feature of the centre was the mail box outside each classroom. A mail box made from recycled materials was set up to encourage children to send 'messages', 'letters' and 'cards' to any other child in the centre. These 'messages' and 'letters' were sorted by the daily 'duty postmen' who would then deliver these letters and cards to the addresses in their respective classrooms. This unique feature generated much interest among the centre's children since its inception in 2003.

This centre was very active in participating in various programmes and activities at the national level. The principal perceived these national events as good opportunities for their children to learn about their community and the society that they live in.

The centre also tapped on their alumni to lighten the load of teachers. Most of the members of the alumni graduated 10 years ago. They were invited by the principal to come back to serve the centre by providing assistance at various enrichment activities for their young friends and the centre, such as field trips and the annual graduation ceremony.

6.4.2 Cycle of Evaluation

6.4.2.1 Evaluation phase

a) Findings on the quality of the learning environment

The ECERS tool was used to assess the learning environment of the centre. In terms of the ECERS scoring, Centre E out-performed the rest of the centres and became the highest-rated performer. Its mean ECERS score was 5.69, considered a high standard corresponding to Level 5 (Table 6.13) in the ECERS system. A brief summary of the mean ECERS scores of the seven sub-domains is found in Table 6.13. On the 7-point scale, the centre did well in Personal Care Routine (6.80), Language & Reasoning (6.25) and Interaction (6.00). The sub-domain which required attention was the Program Structure (4.00).

Table 6.13: ECERS and Sub-Scale Ratings for Centre E

Centre	Mean score	ECERS Standard	Space & Furnishing	Personal Care Routines	Language & Reasoning	Activities	Interaction	Program Structure	Parents and Staff
E	5.69	Level 5 – good standard	5.75	6.80	6.25	5.60	6.00	4.00	5.33

b) Findings on the quality of child involvement

In 2005, the centre teachers spent September and October observing their children using the Child Involvement Scale. The 2005 data on child involvement levels reveals that the mean score (Table 6.14) of Centre E was 3.84 which was better than the overall mean score of 3.62.

Table 6.14: Mean Child Involvement Score for Centre E, Year I

Centre	Mean score 2005	Overall mean score of 8 centres	Difference in Scores
E	3.84	3.62	+0.22

c) Findings on quality of adult engagement

Centre E adopted the project-work approach to design its curriculum programme. This approach demands that the teachers acquire good facilitation skills and interaction skills, especially in the three attributes of adult engagement, i.e. sensitivity, stimulation and autonomy.

The adult engagement profile of the centre is shown in Table 6.15. The 2005 data shows that this centre's teachers' facilitation skills were generally good. This is evident by looking at the centre's mean score for adult engagement, 3.49, which was higher than the overall mean score.

Among the three attributes, the teachers scored highest for their sensitivity towards child learning. The ability to stimulate learning came in the second and this was followed by their ability to provide autonomy.

Table 6.15: Mean Adult Engagement Scores for Centre E, Year I

Centre	Adult Engagement (Subscale)	Mean score
E	Sensitivity	4.21
	Stimulation	3.88
	Autonomy	3.47
	Average of 3 subscales	3.85
Overall mean score of 8 centres	Adult Engagement Level	3.46

6.4.2.2 Action planning phase

Based on the ECERS rating, the mean child involvement scores and the adult engagement data collected in 2005, the teachers felt that they urgently needed to acquire facilitation skills. Thus, the centre worked out an action plan focusing on two areas (Table 6.16):

Table 6.16: Work Plan 2006 - Focussed Domains for Improvement

Centre	Space & furni-shings	Personal care routines	Langua-ge & reason-ning	Activities	Interaction	Pro-gram struc-ture	Pa-rents & staff
E				√	√		

a) Action 1: to improve on teachers' skills in interacting with children

Centre E adopted a project-based approach in its programme design, aiming to develop thinking skills and inquiring minds among their children. Teachers have to be good facilitators and skilful in guiding children to discuss and explore the ideas during 'circle time' every day. Though guiding steps and questions were discussed at the level meetings, classroom situations vary from day to day. Hence, teachers' competency in facilitation is critical, especially in the areas of stimulation and autonomy.

b) Action 2: to select project themes in line with the national events

In designing the project activities, Centre E referred to the national events that they could work on. In 2006, the centre proposed that its learning themes could tie in with national themes, such as the environmental conservation and healthy lifestyles, promoted by the Ministry of Environment and the Health Promotion Board respectively. This would further improve the image of the centre as the themes would provide children opportunities to

learn about good moral values and help the centre gain recognition for its contributions towards society. In 2006, one of the project titles for K2 was on 'saving the environment, saving the world'.

6.4.2.3 Improvement phase

a) Improvement on child involvement

Table 6.17 shows an increase in its mean child involvement score by 0.36 from 2005 to 2006. It also shows that the centre's mean scores in both years were above the overall mean score of the participating pre-schools.

Table 6.17: Mean Child Involvement Scores for Centre E, Year I and Year II

Centre	Mean score 2005	Mean score 2006	Difference in Scores
E	3.83	4.19	+0.36
Overall mean score of 8 centres	3.62	3.93	+0.31

b) Changes on adult engagement

Observations were carried out to find out the quality of adult engagement between August and October 2006. The mean adult engagement scores over the two years are shown in Table 6.18.

The mean adult engagement score for Centre E had declined by 0.39 from 4.21 in 2005 to 3.82 in 2006. Qualitative data analysis in the next Section 6.4.2.4 on reflection showed otherwise.

In both years, among the mean scores of the three attributes of adult engagement, the ranking order of the scores looked similar to the pattern found in other centres. The score for 'sensitivity' was at the top and the score for 'autonomy' was at the bottom.

Table 6.18: Mean Adult Engagement Scores for Centre E, Year I and Year II

Centre	Adult Engagement (Subscale)	Mean score 2005	Mean score 2006	Difference in scores
E	Sensitivity	4.21	3.82	-0.39
	Stimulation	3.88	3.59	-0.29
	Autonomy	3.47	3.27	-0.20
	Average of 3 subscales	3.85	3.56	-0.29
Overall mean score of 8 centres	Adult Engagement	3.46	3.31	-0.15

6.4.2.4 Reflection phase

a) Managing resistance

The principal recognized the need for and importance of implementing a process of peer review and external validation. She was aware that it could be threatening to the members in the centre, she believed that benchmarking was one of the means to show accountability to stakeholders. Hence, she used many sessions at the staff meetings to convince her teachers of the value of the framework. The following paragraphs explain that most of these teachers made an attempt to change their ways of engaging child's learning.

b) Attitude toward change and self-awareness

The observation notes by the principal and me show that in 2006, the teachers had demonstrated considerable improvement in their ways of engaging children. They had become more sensitive, especially in giving encouragement and listening to children's explanation of ideas. The following examples illustrate this point.

The centre encouraged teachers to praise the children to encourage learning. I noticed how a teacher managed a noisy group of children. The teacher (T57) saw a group of children running round the classroom. Instead of scolding the running group, she pointed to the class rules listed on the wall and praised one of them who stopped running. After a while, the rest followed suit.

This centre emphasized that teachers should be a good role-model of acceptable behaviour for their children. Words such as 'thank you', 'please' and 'excuse me' were used by teachers throughout the school day. On one occasion, a teacher (T54) spotted a child taking away a bowl of left-overs; she walked towards the child and said, "thanks Susana for clearing away the left-overs".

c) Enhancing teachers' capabilities and skills

There have been many observations in 2006 of teachers adopting different ways to stimulate children's learning.

The external assessor noted the strategy of how a teacher helped the class understand some concepts related to numeracy. One teacher (T56) made use of the classroom tables and chairs to talk about length and invited children to use the words "longer, shorter, number of tables and chairs". Children could relate well with things and events around them.

Another example was that after discussing the topic of 'pyramid', a teacher (T52) invited six children to use raw spaghetti and glue to build a pyramid. She praised some children who put in effort on construction. She also stopped by a boy who appeared to be unable to construct one. She posed him questions such as "what does a pyramid look like?" This was to find out if the child had the correct concept of a pyramid. She also asked him, "Could

you try to form a pyramid on a table?" And "How many sticks of raw spaghetti would you use to come up with the shape of a pyramid?"

In another episode, in order to extend a child's thinking when the teacher (T53) observed him painting, she asked him, "How did you decide what colours to use?" She also wanted to find out the thinking process of the child by asking, "What is your favourite part of this painting?"

With the appropriate words and expressions that the teachers put across to the learners, evidence of stimulation and autonomy of child learning could be seen.

In an observation of classroom activities on the project theme of 'food', the teacher (T51) guided children in gathering information from the labels of some cartons of milk, boxes of cereal and sweets, with the aim of teaching children some concepts related to numeracy. She encouraged the class to explore and discover the information on the labels. Some children examined the labels and searched for the prices and the weight of various ingredients written on the labels. Some children shouted out information. The teacher then wrote the answers on stickers and gave them to the children.

In an observation of a large group activity, the teacher (T50) was working on a project theme, 'car'. She intended to reinforce what the children had learnt about the alphabet and numbers. She got the children to design a number plate on a piece of cardboard by first observing car plates in many cut-outs from magazines and newspapers. Some children recognized and called out the numbers and letters. She also suggested that the children design their own car plates. In addition, she elicited from children the names of various parts of a car, such as window, mirror, seat belt and steering wheel.

Teachers in this Centre were encouraged to practise questioning techniques and to collate lists of appropriate questions that could be used to develop

autonomy in a child's learning. Teachers using appropriate questions, words and expressions would create opportunities for children to explore ideas further, to acquire a more in-depth understanding of concepts and help extend their imagination.

6.5 CENTRE'S REPORTS: CENTRE F AND CENTRE G

6.5.1 The study setting

a) Location

Centre F and Centre G have an affiliation to a religious organization. Both centres are located in a housing estate with children who mainly live in three to five room flats. Their monthly fees of $150-160 per child were quite affordable (Table 5.1). These two centres are about 3 kilometers away from each other.

b) Enrolment and staffing

In 2005, Centre F had 230 pupils with 12 teaching staff including part time teachers. Centre G had 300 pupils with 10 teaching staff. The class size of Centre G was larger than that of Centre F. The principal of Centre G reported that the child-teacher ratio was about 22:1 with a teacher aide. Among the children in these centres, about 80 percent were Chinese, 15 percent Indian and the remainders were from different minority groups. Both the centres run two sessions of three hours each.

Among the 12 teaching staff in Centre F, nearly 60 percent were certificate-trained and 25 percent diploma-trained. This centre had structured staff meetings each term to discuss professional matters. Different levels of teachers met weekly to develop and refine learning materials and to exchange information on the progress of a class or a specific child.

In Centre G, among the 10 teaching staff in 2005, 5 of them were diploma trained, 3 were certificate trained and 2 were undergoing training. Informal

meetings were preferred in this centre. Level teachers had a weekly meeting to talk about professional matters.

The teachers at both centres attended the workshops together. In 2005, there were workshops on the use of the child involvement scale, adult engagement scale and environmental rating scale. In 2006, two other workshops were organized:"Planning an Integrated Learning Unit" and "Facilitation Skills".

c) Leadership and management

These centres were governed by an advisory board with the members appointed by their parent organsation. Under the same board, the philosophy and objectives of the pre-school programme were common to both.

The philosophy is shown on the notice boards of both centres. It reads: "a balanced, holistic and stimulating curriculum is necessary to cater to individual children as each child is unique". The centres also believe that "caring and competent teachers and a responsive environment would facilitate holistic development of a child, developing individuals into persons with strong moral values and a deep passion for lifelong learning".

More specifically, the objectives of the education programmes in these centres are two-fold:

i. to provide a comfortable and conducive environment where children learn through play and project work; and
ii. to help children develop holistically to be socially confident individuals and cognitively competent problem solvers and creative thinkers.

d) Operation, facilities and programme

Physically, these centres are sited on a relatively big compound. Centre F has its classrooms housed in one part of a 3-story church building. Centre G has its classrooms within a 2-story building. Both centres have sufficient indoor and outdoor space for children's activities. Each centre has a music room, and an indoor and outdoor area for physical related activities. In each classroom, 5 to 6 activity corners are set up to integrate learning. Learning resources and play materials are adequate. During the two years of study period, there was a kitchen cook and an assistant hired by the parent organization to cater for snacks for children and lunch for the staff. In Centre F, as part of the staff benefits, a common lunch hour with simple food was catered for the staff. This lunch arrangement gave teachers opportunities to have many informal conversations. As for Centre G, teachers in pairs or threes took their lunch during their free periods in between 11 am and 12.30 pm daily.

Though the centres were under the same advisory board providing direction and financial support, operational matters and programme structures were individually managed by the principal of each centre during the study period.

These centres support the MOE's new curriculum framework. Hence, the principals described their teaching approach as 'child-directed with play as an instructional medium focusing on integrative learning, interactive learning and supportive learning'. The learning experiences cover areas such as language and literacy, numeracy, environmental awareness, music and movement, art and craft, self and social awareness, indoor and outdoor play. English is the medium of instruction. Two mother tongue languages are offered, Chinese and Tamil.

6.5.2 Cycle of Evaluation

6.5.2.1 Evaluation phase

a) Findings on quality of learning environment

Centre F and Centre G had their self-evaluation done separately with their centre staff. The peer review and external validation exercises provided an outside perspective for the assessment of their learning environment. Referring to Table 6.19, Centre F had a mean ECERS score of 5.02 in 2005. According to ECERS standards, Centre F would be described as Level 5, 'meeting a good ECERS standard'. Centre G had its mean score of 4.90 and was termed as meeting the standard of Level 4, 'close to a good ECERS standard'.

Table 6.19: ECERS and Subscale Ratings for Centre F and Centre G

Centre	Mean score	ECERS Standard	Space & Furnishing	Personal Care & Routines	Language & Reasoning	Activities	Interaction	Program & Structure	Parents & Staff
F	5.02	Level 5 – (good standard)	5.00	6.60	5.00	4.70	5.40	3.50	5.00
G	4.90	Level 4– (minimum to good standard)	4.75	6.40	5.25	4.60	5.80	3.00	4.67

b) Findings on quality of child involvement

For child involvement, Table 6.20 shows that Centre F had a mean score of 3.83 in 2005. It was better than the overall mean score of 3.62

among the eight pre-schools. However, Centre G had a mean score of 3.49 that was 0.13 below the overall mean score.

Table 6.20: Mean Child Involvement Scores for Centre F and Centre G, Year I

Centre	Mean score 2005	Overall mean score of 8 centres	Difference in Scores
F	3.83	3.62	+0.21
G	3.49		-0.13

c) Findings on quality of adult engagement

The analysis of the 2005 Adult Engagement data from these two centres is shown in Table 6.21. The 2005 mean score of the adult engagement for Centre F was 3.49 and for Centre G, it was 3.62. Both the centres performed better than the overall mean score of 3.46. Table 6.21 also reveals that the ranking sequence of the scores among the three attributes of adult engagement looks similar to the pattern found in other participating pre-schools. The highest score was for sensitivity and the lowest score for autonomy.

Table 6.21: Mean Adult Engagement Scores for Centre F and Centre G, Year I and Year II

Centre	Adult Engagement (Subscale)	Mean score
F	Sensitivity	3.98
	Stimulation	3.25
	Autonomy	3.23
	Average of 3 subscales	3.49
G	Sensitivity	4.04
	Stimulation	3.62
	Autonomy	3.19
	Average of 3 subscales	3.62
Overall mean score of 8 centres	Adult Engagement Level	3.46

6.5.2.2 Action planning phase

With the 2005 preliminary findings and the input from staff at the end-of-year work plan review sessions, each centre had decided on their action plans for 2006 (Table 6.22).

Table 6.22: Work Plan 2006 - Focussed Domains for Improvement

Centre	Space & furni-shings	Personal care routines	Langua-ge & reason-ning	Activities	Interaction	Pro-gram struc-ture	Pa-rents & staff
F				√	√		
G	√			√	√		

Action plan 2006: Centre F

For Centre F, it had decided to work on two areas as follows:

a) Action 1: to improve on teachers' observation skills

The centre planned to implement a portfolio assessment system to update parents on their child's progress. One part of the child's assessment records included anecdotal notes to reflect a child's learning. With training and practice on the use of the Child Involvement Scale in 2005, the teachers were very familiar with child observation and the signs of child behaviours and actions indicating their level of quality in learning. Once a term, the centre structured an observation exercise using the scale to observe all children in the class. These anecdotal notes provided concrete examples and observable outcomes of a child's learning that would be included in the portfolio assessment records.

b) Action 2: to improve on teachers' facilitation skills

The principal and teachers supported the notion that quality interaction would facilitate quality learning. They planned to organize workshops in 2006 to focus on learning ways to stimulate a child's learning and giving children autonomy in learning. The principal recognised an urgent need to upgrade teachers' facilitation skills, especially on the three attributes of adult engagement: sensitivity, stimulation and autonomy,

Action plan 2006: Centre G

Similarly, with the preliminary findings from the ECERS-rating, Child Involvement scores and Adult Engagement scores in 2005, Centre G's staff discussed and worked on their work plan for 2006. Centre G decided to work on three areas (Tabl 6.22) as follows:

a) Action 1: to develop integrated learning units

Based on the profile of the child involvement profile, the centre noticed that high involvement levels were linked to the gross motor skills activities. Reviewing its time table, the centre realized that children were not given sufficient opportunities for physical outdoor-based activities. The centre hence, planned to introduce more integrated lesson units that promote outdoor play and physical movement.

b) Action 2: to use its physical environment for learning

The centre had a garden with trees and plants. It was looked after by a gardener. The principal and teachers planned to make full use of their own physical environment for child learning about science, plants and trees. They also planned to bring children outside their classrooms for more outdoor

based activities where they could integrate learning of different domain knowledge.

c) Action 3: to encourage practice of observation skills and facilitation skills

Centre G also saw observation as part of the responsibilities of a pre-school teacher. They planned to work with Centre F to organize workshops on facilitation skills, specifically on the two subscales of adult engagement, i.e. stimulation and autonomy

6.5.2.3 Improvement phase

Centre F

a) Improvement on child involvement

With the implementation of the action points stated in Section 6.5.2.2, the centre continued with the child observation exercises in August-September 2006. Table 6.23 shows that the mean score of child involvement had improved slightly by 0.12 from the score of 3.83 in 2005 to 3.95 in 2006. The centre's mean scores in both years were better than the overall mean scores.

Table 6.23: Mean Child Involvement Scores for Centre F, Year I and year II

Centre	Mean score 2005	Mean score 2006	Difference in Scores
F	3.83	3.95	+0.12
Overall mean score of 8 centres	3.62	3.93	+0.31

b) Changes on Adult Engagement

In Year II of the study, the observation on adult engagement was carried out between July and October 2006. The adult engagement levels over the two years are found in Table 6.24.

Table 6.24: Mean Adult Engagement Scores for Centre F, Year I and Year II

Centre	Adult Engagement (Subscale)	Mean score 2005	Mean score 2006	Difference in scores
F	Sensitivity	3.98	3.57	-0.41
	Stimulation	3.25	3.06	-0.19
	Autonomy	3.23	2.80	-0.43
	Average of 3 subscales	3.49	3.14	-0.05
Overall mean score of 8 centres	Adult Engagement Level	3.46	3.31	-0.15

Quantitatively, the data show a decrease in the mean adult engagement scores when comparing 2005 and 2006 data. However, qualitative data collected through observation notes and reflection logs from the practitioners show different outcomes.

There was evidence that some teachers had made changes to their classroom displays of children's work. For example, a teacher (T49) paid closer attention to the height of the child's display. She displayed the children's work on a cupboard door that was at the child's eye level.

The principal of Centre F commented that the teachers had improved their observation skills as they shared with the parents their anecdotal observation notes as evidence of the child learning and development. Parents were pleased with the new format of showing their child's progress. One example was noted by a teacher (T48) about a target child was that "his body is constantly swinging from one position to another. He says 'I wanna be a frog'. He is then jumping around and making sounds like a frog." When she gave

feedback to the parents, she highlighted that the child had motor skills competency in jumping and moving and he had knowledge about a frog.

Parents were happy with these concrete examples and observable outcomes of their child. This has helped improve the professional image of the pre-school and the pre-school teachers. The next Section 65.2.4 on the Reflection phase provides more concrete examples to support the claim.

Centre G

a) Improvement on child involvement

With the implementation of the three action points mentioned in the previous Section 6.5.2.2, data collection was done during the child observation exercises in August-September 2006. Referring to Table 6.25, the average mean scores of the centre involvement levels in Centre G in the two years are shown.

Table 6.25: Mean Child Involvement Scores for Centre G, Year I and Year II

Centre	Mean score 2005	Mean score 2006	Difference in Scores
G	3.48	3.84	+0.36
Overall mean score of 8 centres	3.62	3.93	+0.31

The mean score for child involvement in 2006 showed an improvement from the mean score of 3.48 in 2005 to a score of 3.84 in 2006. The teachers in their reflection logs in the next Section 6.5.2.4 expressed that they were more observant. Observation has in a way become part of their teaching methods. They expressed that they were able to pick up signals of child learning and could translate these signals to describe child development in a specific domain of child development. For example, a teacher (T46) observed a child and noted her saying to another child, "after 14 is my favourite number. It is

15. You know, I live on 15th floor." The teacher quoted this example to share with the parents about the child's development on number and sequencing concepts.

b) Changes on adult engagement

Centre G carried out its adult engagement exercise in September-October 2006. The adult engagement profiles of the two years are shown in Table 6.26. The mean score of adult engagement for Centre G in 2006 was 3.85 that was an increase of 0.29 from the score of 3.56 recorded in 2005. Also, the mean score of 3.85 in 2006 was better than the overall mean score of 3.48.

Like other centres, a similar ranking order was found among the scorings of the three attributes of adult engagement. The attribute on sensitivity was on the top of the scores, followed by stimulation and autonomy, the lowest rank. During the two years of study, in this centre there was an upward trend in the mean scores of the three attributes, sensitivity, stimulation and autonomy. There was an increase on their scores of 0.39 on sensitivity, 0.29 on stimulation and 0.20 on autonomy.

Table 6.26: Mean Adult Engagement Scores for Centre G, Year I and Year II

Centre	Adult Engagement (Subscale)	Mean score 2005	Mean score 2006	Difference in scores
G	Sensitivity	4.04	3.79	-0.25
	Stimulation	3.62	3.67	+0.05
	Autonomy	3.19	3.42	-0.13
	Average of 3 subscales	3.61	3.62	+0.01
Overall mean score of 8 centres	Adult Engagement Level	3.46	3.31	-0.15

c) More integrated learning activities for children

Following the action plan 2006, the teachers in Centre G shared that there was an increase in the provision of outdoor-based activities for their children.

An example was noted that a teacher (T25) took a K2 class to the car park area. The teacher asked the children to observe the traffic flow and the vehicles. The class was asked to use chalk to draw the road scene and/or write sentences about their drawing on the concrete ground. The teacher noticed that many children had no experience using chalk to draw and write, especially on a rough surface. When the teacher went back to the classroom, she asked her class to share their experiences when using chalk to draw on rough surface. Some children complained that the chalk was too short; some found difficulties to color on the rough surface. The teacher got the class to compare the rough surface of the ground and the smooth surface of the chalkboard.

In another observation (T30), children at the car park were asked to roll big hula-hoops freely. This was to practice their eye-hand coordination. The teacher also asked the children to measure the distance that the hula-hoop traveled from the starting point to where it landed. This was to incorporate learning of mathematics with motor-skills.

The above examples show that the centre had made efforts to incorporate learning of various domains in a learning unit. A teacher's (T26) remark summed up their effort. She said that "I would want to have more activities outside the classroom and to provide more time for play so that children can develop their social and interaction skills and also learn language through play."

6.5.2.4 Reflection phase

The principal and teachers from these two centres expressed positively about their journeys. There was a significant change on teachers' perception about the need for change in their organization and the need to improve their skills. The key learning points of the two centres are as follows:

a) Attitude toward change and self-awareness

Several teachers observed changes taking place in their work place and classrooms. A teacher (T27) reflected that "I discarded teacher directed activities and adopted motivational activities with children as decision makers and global thinkers."

Another teacher (T25) also noticed that "(teachers) are more child oriented when handling the day to day activities, going down to a child's level to talk about their work instead of lecturing to them."

On reflection, a teacher (T26) mentioned that "I changed my old mindset of being a teacher who lectures and to take control of the class to a teacher who grants the student full liberty to choose activities that they are interested in. I have become a listener and have taken a backward stand, observing and facilitating during play and work." She also noticed that "in the past we were doing the things we have been doing year after year and it has become the practice and culture of our kindergarten but these tools have helped us do things differently for the benefit of the children. As we delve deeper into the subject we discover more aspect and dimensions and we are not stuck or tied down but rather liberated to take up more challenges and these have been the hallmark of our kindergarten."

With training workshops and practical hands-on activities, the teachers stated that their observation skills and facilitation skills had improved after using the

child involvement and adult engagement tools. A few teachers (T27, T28, T29, T30) expressed the view that they had gained an awareness on these new knowledge and skills. They emphasized that 'it was by practicing them that they realised that it was not just the skills, but the underpinning values behind the skills that are more crucial'.

b) Capabilities and skills acquired

(i) Observation becoming integrated and a part of a teacher's practice

Though observation skills were not new to the teachers, the practice of observation was not structured in the assessment system of Centre F. After practising the self-assessment using the Child Involvement Scale, the centre decided to provide concrete examples and observable outcomes of child development into their new portfolio assessment system. In 2006, the teachers in Centre F followed a structured procedure and set aside time frame to observe their children every term. Four observation records per child were used as anecdotal notes and included in the portfolio of a child. With ample practice of observing, a teacher (T26) learnt that "every child has his own way of getting involved and their involvement level varies and it can be seen in their interaction, physical movement and expressions reflected on their face." According to the feedback from the principal, observation has eventually become part and parcel of everyday life of the teachers in the centre F.

(ii) Improvement on interaction quality with children

There was evidence to show that teachers understood the importance of quality interaction and had acquired good strategies in interacting with children. One teacher (T30) reflected that "I learnt about the engaging qualities of an adult and how an adult could provide supportive interactions and be interested in what the child did. … I will give more praise and

encouragement and allow the children more freedom to explore. I will also provide them with more challenging activities that promote interactions, problems solving and choice."

A teacher (T25) shared her view that "I learnt that environment is not only the physical environment but the human environment as well. A positive verbal environment plays an important role to build the child's self-esteem and to boost the staff's morale too."

One other teacher (T28) stated that "I have changed from being directive to intervening when necessary and in giving a child full freedom to choose the activity that interest them. Rather than talking, I have started to listen more and to be there whenever the need arises."

(iii) Usefulness of the tools

Most teachers noted the usefulness of the tools used in their self-assessment process. One teacher [T29] concluded that "the three tools have helped me to become more confident when observing and assessing the children." She also noted that "collecting data and evidence help us to see what are our setbacks or our accomplishments so that we can further improve on the situation which in turn will benefit not only the children but the whole kindergarten."

Another teacher (T27) reflected that "the tools helped me to be inspired in many areas so that I can consider and contribute to the child's learning journey, [for] example, giving quality time, being able to listen and communicate effectively, … creating more open ended activities with open ended materials to allow the children to think, discuss and work with their peers enjoyably and to allow co-operative practices." She expressed that "instead of sticking to the old routines year after year with the help of these tools, we are able to develop more challenging changes for the benefit of our

children thus instead of being tied down we feel more liberated to try out more things differently."

(iv) Co-operation and collaboration with peer colleagues

Teachers in these centres acknowledged the value of peer learning and collaborative learning. A teacher (T30) reflected that "without this collaboration we would not have a sense of direction and work would be meaningless and our thoughts would be dry (no creativity)". She perceived that "every teacher's ideas and contributions are valued to bring about changes. To organize and work in a team spirit is a vital sign to accept changes and to move on to greater heights. … With openness to accept changes and challenges, my centre has attained a healthy environment where we work with each other, and look forward to moving with zeal as we journey with our young ones."

6.6 CENTRE REPORT: CENTRE H

6.6.1 The Study Setting

a) Location

Centre H is located near to a small housing estate. It was housed in a rented old school building with a three story classroom block, a small canteen area and an outdoor green space for children to have their physical activities. The centre is governed by an ethnic-affiliated institution that runs five early childhood services in different housing estates.

b) Enrolment and staffing

In 2005, it had a pupil enrolment of 190 children who were mostly Malays (94 percent) with some Indians (5 percent) and Chinese (1 percent). The pupil enrolment had been shrinking in the recent years. With transport provision, the pupils come from different neighborhoods. Centre H charged relatively low monthly fees of about $120 per child (Table 5.1). The centre had six teaching staff. Among them, four were early childhood certificate trained, one diploma trained and one undergoing a professional training course during the study period. According to the principal, the staffing situation had been stable over the last three years.

c) Operation, facilities and programme

The centre has offered three-session programmes since it started its services. As pupil enrolment had declined in recent years, since 2005 it had opened only two-session programmes. Its first session started from 8.00 am to 11.00 am and second session operated between 11.30 pm and 2.30 pm.

In 2005, the principal informed me that the rental contract would be due soon. As the rental status was uncertain, there had not been much physical improvement done to the physical structure in recent years. Though the building appeared to be an old structure, the physical size of a classroom in this old school building could accommodate comfortably four to five learning stations with each having five to six children. These stations included language area, library corner, block building section, manipulative table and home corner. For some classrooms, an art and craft section and writing tables were set up outside the classrooms where there was a big landing area. The centre used recycled materials and creatively constructed various shelves and storage cupboards for keeping and organizing their learning materials in the classrooms.

A day programme started with children assembled at the open area at the ground level. After singing the national anthem and religious recitation, children would be led by their class teachers to start their day of learning. Weekly lesson activities were prepared by the level coordinators and the subject heads. Activities and worksheets of the same theme were used commonly across all the classes of the same level. The centre explained that many parents associated their child's learning with worksheets and home work.

d) Leadership and management

The parent organization of the centre set directions and provided advice and guidance to the running of its learning centres and childcare services, including Centre H. The centre advocated that it encouraged learning through exploration, investigation, imagination and play activities in small groups. The learning content covered domains such as English and mother-tongue languages, numeracy, motor skills, self-awareness, environmental awareness and moral and spiritual development.

This centre emphasized the importance of working partnership with parents for child learning as the centre believed in experiential learning and meaningfully everyday experiences for children. Hence, it had structured ways to engage parents who could help their child's learning.

Centre H issued parents newsletters periodically. The newsletters included write-ups on the activities and programmes that the centre would embark on the following weeks for various levels and class groups. For example, in the newsletter to parents of K1 children for term 3, week 9, 2005, it included information on the theme of "occupation" for K1 classes and the specific learning items under each subject areas, such as learning of letter blends 'op' – hop, top, pop, learning of numbers '5' and '6' and practicing recognition of the numbers by using the 'snake and ladder' game.

The newsletters also suggested that teachers would use the 'postman' as an example of occupation and design activities that would be related to a postman. For example, children would be making envelopes, making stamps and writing a card or a letter to be posted to someone. Parents were encouraged to contribute their used stamps and used envelopes for learning activities.

Another newsletter to parents for Term 3, week 6, 2005, informed parents that K1 children would be learning about the Singapore 40th Birthday. Hence, it encouraged parents to share reading materials, such as books and magazines, newspaper cuttings related to the history of Singapore and the photographs of the National parades in the past years.

Similarly, the newsletters for the parents of K2 classes would include information related to K2 learning of the specific weeks. Besides these, sports day, excursions for children, family days and graduation ceremonies were some other events that involved parents in planning and invited parents to participate.

6.6.2 Cycle of Evaluation

6.6.2.1 Evaluation phase

The centre's mean ECERS score was 4.33. According to the ECERS assessment system, Centre H was at the Level 4 ECERS quality standard. A brief summary of the mean scores of the seven sub-scales of ECERS is also presented in Table 6.27.

Table 6.27: ECERS and Subscale Ratings for Centre H

Centre	Mean score	ECERS Standard	Space & Furnishing	Personal Care Routines	Language & Reasoning	Activities	Interaction	Program Structure	Parents and Staff
H	4.33	Level 4 – (minimum to good standard)	4.63	6.40	4.00	3.60	5.40	3.00	3.67

a) Findings on quality of child involvement

In September and October 2005, the teachers conducted the child observation exercise using the Child Involvement Scale. The child involvement data were analysed. The centre's mean score of 3.47 (Re: Table 6.28) in 2005 was lower than the overall mean score of 3.62 among the eight pre-schools involved in the study.

Table 6.28: Mean Child Involvement Score for Centre H, Year I

Centre	Mean score 2005	Overall mean score of 8 centres	Difference in Scores
H	3.41	3.62	-0.21

b) Findings on quality of adult engagement

The mean adult engagement score of Centre H is shown in Table 6.29. In 2005, the mean score was 3.41. The centre's mean score was lower than the overall mean score of 3.62. While examining the profiles of the three attributes, sensitivity scored the highest, stimulation the second higher and autonomy had the lowest score.

Table 6.29: Mean Adult Engagement Scores for Centre H, Year I

Centre	Adult Engagement (Subscale)	Mean score
H	Sensitivity	4.01
	Stimulation	3.38
	Autonomy	2.85
	Average of 3 subscales	3.41
Overall mean score of 8 centres	Adult Engagement Level	3.46

6.6.2.2 Action planning phase

With limited financial support and the constraint on manpower, the centre identified and prioritized three areas of improvement for its centre in 2006 (Table 6.30).

Table 6.30: Work Plan 2006 - Focussed Domains for Improvement

Centre	Space & furni-shings	Personal care routines	Langua -ge & reason-ning	Activities	Interaction	Pro-gram struc-ture	Pa-rents & staff
H	√			√	√		

a) Action 1: to adopt an integrated approach to design its programme

At the peer review session in 2005, teachers' feedback noted that learning was more subject-based and less of an integrated approach for designing programmes for child learning. The centre supported the new curriculum framework introduced by the MOE that children learn best in a play-based setting and through an integrated and interactive approach. The centre had planned to develop several integrated lesson units giving children ample opportunities to practice gross motor skills while learning literacy and numeracy.

b) Action 2: to help teachers acquire facilitation skills

Centre H was aware that their teachers were weak in facilitation skills. A workshop would be organized to help teachers learn to interact more effectively with children, especially on raising the quality of teacher-child interaction on sensitivity, stimulation and autonomy.

c) Action 3: to improve on the overall displays in the centre

In the self-evaluation exercise, an area of concern that needed immediate attention was the display in classrooms. The corridor and common assembly areas looked bare with few displays of child's work. Some displays were beyond the height of a child's eye level. The centre aimed to provide sufficient and stimulating display materials that were aligned with the existing learning themes.

6.6.2.3 Improvement phase

Working on the action plan during 2006 for centre improvement, the data collected at the end of 2006 revealed good progress happening in the centre.

a) Improvement on quality of child involvement

In the second round of data collection, Centre H had shown an improvement on child involvement scoring. The centre's mean child involvement score in 2005 was 3.47 and in 2006, it went up to 4.00 (Table 6.31). The child involvement level in 2006 was better against the overall mean score by 0.07.

Table 6.31: Meam Child Involvement Scores for Centre H, Year I and Year II

Centre	Mean score 2005	Mean score 2006	Difference in Scores
H	3.41	3.34	-0.53
Overall mean score of 8 centres	3.62	3.93	+0.31

A teacher (T59) noticed that observation helped her know her children better. She recorded an observation of one child saying that "she plays at the manipulative corner with some Moblo cubes and links. She chose the links of different colors and fixed them up, making it like a star. At times, she played it like a spinning top." She discovered that this target child was highly imaginative.

b) Changes on quality of adult engagement

Concerning the centre's mean scores of 2005 and 2006, the adult engagement levels had shown some variations. Table 6.32 shows that the mean score of adult engagement for Centre H had decreased by 0.07 from 3.41 in 2005 to 3.34 in 2006. However, if using the 2006 overall mean score of 3.48 as a benchmark to compare it with the other centres, the adult engagement level of 3.41 in Centre H was still 0.07 lower than the overall mean score.

When analyzing the scoring trends of the three attributes of adult engagement, the attribute of sensitivity had decreased by 0.45 on its mean

score over the two years. There was also a decline in the autonomy mean score. However, the other attribute of stimulation, the mean score showed a little increase from 2005 to 2006.

Table 6.32: Meam Adult Engagement Scores for Centre H, Year I and Year II

Centre	Adult Engagement (Subscale)	Mean score 2005	Mean score 2006	Difference in means
H	Sensitivity	4.01	3.56	-0.45
	Stimulation	3.37	3.40	+0.03
	Autonomy	3.07	2.85	-0.22
	Average of 3 subscales	3.34	3.41	-0.07
Overall mean score of 8 centres	Adult Engagement	3.46	3.31	-0.15

On the whole, the quality of adult engagement in the centre shows no increase on the mean scores. However, there were observations of good practices related to teacher-child interaction in 2006 by the principals and me. For example, in a K2 class, the teacher (T67) adopted an effective strategy to settle children down after an outdoor game. She got the class lying down on their back on the floor and asked a child if he could hear the bird 'calling' in the music. She then turned the volume of the music softer and softer, hoping to calm down the children.

c) More activities to promote integrated learning

To do away with the single subject-based learning, many integrated learning units were developed. At a lesson planning session, one group of teachers worked on a theme 'Money'. The group suggested that the lesson unit be divided into five sub-activities for a week. Activities included learning the values of local coins and dollar notes using the price tags found on daily necessity items. Next, the lesson was on imparting the moral value of saving by setting up a bank at the dramatic corner. Tracing coins and making paper

coins were extended activities to tie in with a buying and selling game later. A story book and a theme song on 'money' were used to summarise the weekly learning.

There were many more learning activities incorporating physical exercise in 2006. One observation of a teacher (T58) was interesting, she said that she invited children to 'draw' numbers and alphabets using a silky dancing banner instead of pen and pencil. By doing so, the teacher had incorporated learning of language and numeracy with the gross motor skills of swinging the hands and arms.

Another observation of a teacher (T64) was that she invited children to work in pairs whereby one leg of a child was tied together with another leg of his/her friend with string. This enabled children to learn to synchronize and cooperate with each other. These were good examples of how teachers have put objectives of self and social awareness and motor skills development together in a single learning activity.

6.6.2.4 Reflection phase

Based on the reflection logs, practitioners in the centre shared their viewpoints in mainly two areas:

a) Attitude toward change and self-awareness

The teachers and principal of the centre found the observation tools useful and helped them to reflect on their own teaching, and, in turn, starting to change their attitudes and practices.

A teacher (T62) commented that "the ECERS helped as a bar scale to check myself as a teacher in providing the appropriate learning activities and whether the learning centers I created for children were stimulating enough,

appropriate and safe." She also felt that the tool (ECERS) "directed us what the next step to do so as to improve from the current standard to a higher standard."

Another teacher (T66) stated in her reflection log that she wanted to improve on the item of child display. She referred to the descriptors of Level 3 and Level 5 in the ECERS tool to understand what quality child display meant. Consequently, she increased the display of children's work on the wall of her classroom. She also ensured that these displays were at the child eyes' level and the display was relevant and appropriate for the age group of her class.

b) Acquisition of skills

In terms of observation skills, teachers expressed that though observation was not new to them, these measuring tools used in the self-evaluation process enabled them to see the 'quality elements in a concrete manner'. In a reflection note, one staff member (T65) shared that "through the child involvement scale, we were able to discover the kind of activities, resources and manipulative that would result in children showing interest and concentration. Therefore we made various constructions in the learning centers that would result in purposeful play." She continued to praise the scale saying that "it is an effective tool to gauge and assess children's involvement in any self-directed activities with evidence."

The following observation notes shared by a teacher are examples of how a teacher learning about the development of a child by practicing their observation skills using the Child Involvement Scale.

In an interview I had with a teacher (T60), she said that in one of her observation sessions, she recorded a girl on a table-toy section playing a fishing game. In sharing her observation note, the teacher stated that "[she] uses the fishing rod to catch fish with friends, finds that her fishing rod was all

tangled up. She tried to free the line, get help from a friend, and thanked the friend for helping her." Through this observation, the teacher collected evidences to show that the girl was polite and was socially competent in approaching others for help when situations needed.

In another observation by the same teacher, when she assessed a target boy's ability in motor skills, she stated that this boy "'sits on a toy car at the playground, he calls [a] friend to push the car. He calls out 'stop, stop' when his friend pushes the car too fast. [He] also puts out one leg to stop the car from moving. This is concrete evidence that the teacher used to share with the parents and explain to the parents how their child has progressed in the areas of domain learning and in the competencies in terms of socialization and interaction with peers.

In brief, the reflection from the teachers showed that the scale and its observation sheet had helped them know more of the children under their charge; hence, they were able to prepare more appropriate activities for their children.

6.7 FINDINGS TO ANSWER THE SECONDARY RESEARCH QUESTIONS

The above sections of the centres' reports describe the self-evaluation journeys that each centre went through and the types of capabilities and skills that the participating teachers and principals expressed that they had gained over the two years study period. These reports had answered the secondary research questions.

(i) In what ways, if any, would the adoption of a self-evaluation and development framework help enhance teachers' capabilities and skills in the selected pre-schools?

(ii) In what ways, if any, would the adoption of a self-evaluation and development framework help improve leaders' capabilities and skills, and in turn help effect organisational change in the selected pre-schools?

6.7.1 Summary of the Findings

Each participating centre had its unique experiences and challenges when they went through the self-evaluation and development cycle. From the quantitative and qualitative data, it was revealed that all these centres showed improvement in varying degrees and in different aspects of their child involvement levels. However, in terms of adult engagement levels, 2 centres showed slight improvement and 6 centres had shown a decline in their adult engagement levels.

Table 6.33 summarises various changes, either an increase or decrease in the child involvement and adult engagement in these participating pre-schools in Year I and Year II. The table also presents the observed changes on the capabilities and skills that the participating teachers and principals had revealed.

Table 6.33: Summary of the Findings

Research questions	In what ways, if any, would a self-evaluation and development framework help improve/enhance the ….(a) – (d)			
Centre	**(a) mean child involvement scores 05-06**	**(b) mean adult engagement scores 05-06**	**(c) teachers' capabilities and skills**	**(d) principals' capabilities and skills**
A	•3.89 (05) to 4.05 (06) •increased by 0.16	•3.63 (05) to 3.56 (06) •decreased by 0.07	• observation skills • facilitation skills • communication with children • Communications skills with parent • design of integrated curricular activities	• directional clarity • creative intelligence in managing resistance • people enablement: awareness • reciprocal communication: with parents
B	•3.54 (05) to 4.31 (06) •increased by 0.77	•3.46 (o5) to 3.62 (06) •increased by 0.16		
C	•3.46 (05) to 3.63 (06) •increased by 0.17	•3.10 (05) to 2.92 (06) •decreased by 0.18	• observation skills • interaction skills • design of integrated learning activities • team work: sharing ideas • design of a conducive learning environment	• directional clarity • critical thinking: self-reflective practices • reciprocal communication: sharing views
D	•3.72 (05) to 3.67 (06) •decreased by 0.05	•3.24 (05) to 3.11 (06) •decreased by 0.13		
E	•3.83 (05) to 4.19 (06) •increased by 0.36	•3.85 (05) to 3.56 (06) •decreased by 0.29	• observation skills • facilitation skills (attributes - stimulation, autonomy) • Questioning skills • Use of positive language/ thinking language	• directional clarity • critical thinking: self reflection • creative intelligence to manage resistance • people enablement: self awareness

Research questions	In what ways, if any, would a self-evaluation and development framework help improve/enhance the ….(a) – (d)			
Centre	**(a) mean child involvement scores 05-06**	**(b) mean adult engagement scores 05-06**	**(c) teachers' capabilities and skills**	**(d) principals' capabilities and skills**
F	•3.83 (05) to 3.95 (06) •increased by 0.12	•3.49 (05) to 3.14 (06) •Decreased by 0.35	• observation skills: use of child involvement scale, adult engagement scale and early childhood environmental rating scale • facilitation skills • designing integrated activities • collaboration: sharing ideas	• directional clarity • critical thinking: self reflection • people enablement: self-awareness • reciprocal communication: open dialogue
G	•3.49 (05) to 3.84 (06) •increased by 0.35	•3.615 (05) to 3.623 (06) •Increased by 0.008		
H	•3.47 (05) to 4.00 (06) •increased by 0.53	•3.41 (05) to 3.34 (06) •decreased by 0.07	• observation skills • facilitation skills • design of integrated activities	• directional clarity • reciprocal communication • people enablement

*Effective leaders appear to demonstrate a capacity for: (i) emotional intelligence; (ii) critical thinking; (iii) directional clarity; (iv) creative intelligence; (v) people enablement; (vi) reciprocal communication and (vii) perseverance (Rodd, 2006, p.182)

The centres' reports in this chapter have provided evidence to substantiate the claim that a self-evaluation and development framework is a promising strategy and a framework that could help improve the quality of child learning and effect change in an organisation. This process has also enhanced some aspects of capabilities and skills of the leaders and the teachers who went through the journey.

6.7.2 Enhanced Leadership Quality

As mentioned in Chapter II, Section 2.4.3, that Senge (1990) urged leaders to create ample opportunities for staff to continue learning, so as to expand the capabilities of the people in the organisation. In this study, it was evident from the qualitative data that ample learning opportunities were created in those pre-schools that have implemented the framework.

It was also mentioned in Chapter II, Sections 2.4.3 and 2.5.1 that innovation is about people changing their thinking and doing. To effect change, these participating leaders first thought through and developed clear goals and objectives for improvement. These goals were aligned with the aims for the implementation of the framework, i.e. to provide a quality learning environment and quality teaching for quality learning of children.

To ensure that the implementation effort was sustainable, the participating principals adopted the recommended tools to guide the process and allow the teachers to visualize the process and anticipate possible problems.

To achieve the goals of the programme, the infrastructural support, especially in the provision of time and resources, from some of these participating principals were evident. Some principals arranged relevant workshops for teachers to acquire observation and facilitation skills. Some principals reduced the work load of their teachers by employing relief teachers to handle non-teaching jobs. Some principals guided the staff in time management. Equally crucial was the recognition given to their teachers' expertise, knowledge and practices during the implementation stage.

The most difficult part in effecting change is the change of attitude and value system of the staff. In these eight participating pre-schools, the teachers were given opportunities to be involved in assessing their own settings. They observed the child involvement levels to assess the effectiveness of their

teaching strategies and lessons designed. They learned to give children the autonomy in learning and provide them with stimulation in the child learning process.

A broad consensus among all participants and commitment from the leaders in these participating pre-school was vital for the self-evaluation and development framework to be successfully implemented. It was evident that a smooth implementation of the framework lies very much on how to lower the teacher resistance as pointed out in Chapter II, Section 2.4.4. At the initial stage, the strong feelings of "confusion and disbelief" could be one of the reasons behind the decline of the mean scores for adult engagement in most centres.

A teacher (T52) found her learning journey "very rewarding'. She said, "It [heightens] my self-worth and confidence in discharging my duties as a facilitator". Similarly, another teacher (T31) acknowledged that "it was worth the time. Yes, as it provided a period of uninterrupted time to do comprehensive self reflection that can be used to bring about positive changes to personality and style. Children have greater exposure to information nowadays and we should change our methodology according to the ever changing world."

As described in Chapter II, Section 2.5.3, to ensure learning effectiveness, professional development activities should include the self-reflection of an individual's own belief and value system.

Upon reflection, a teacher (T16) commented that "self appraisal is a process that helped me recognize my shortcomings" and "helped me to be a lifelong learner". The teacher believed that "self-reflection helps identify continuous changes and growth."

Another teacher (T32) expressed that "reflection, if carried through, can bring forth positive change which can be accepted readily because of valid justifications." In summary, a teacher (T49) said "Yes, change is inevitable and self appraisal promises a more organized way to prioritize change".

These examples are what Senge (1994) termed as 'the circle of deep learning' (p.42) that enables a change of culture, change of attitude, values and beliefs. There are many examples in the reflection logs written by the teachers from each centre that described how, once they started gaining an awareness of the rationale and underpinning principles behind their actions, they eventually questioned their beliefs and changed their values, knowing what is appropriate and what can help them achieve the goals.

Rodd (2006, p.182) states that an effective leader is someone who demonstrates a capacity of seven attributes: emotional intelligence, critical thinking, directional clarity, creative intelligence, people enablement, reciprocal communication and perseverance. The leaders in these pre-schools had demonstrated some of these qualities while implementing the framework. These leaders had key influence in how the self-evaluation and development framework was promoted and integrated within the culture of the centre. They ensured a smooth completion of the cycle as they had seriously looked into three critical elements mentioned by Senge (1994) namely:

a) Goal setting

As described in the centres' reports, the principals and senior staff in these pre-schools recognized the need and had set clear goals and achievable targets. They aimed to provide quality learning for children by ensuring quality adult engagement with children and creating a quality environment for learning. After their self-assessment, they also set realistic and workable targets for their action plans for 2006. These goals provided

their teachers with a clear direction and geared their resources and effort towards achieving their aims.

b) Methods and tools

In this study, the teachers in the pre-schools were guided by clear procedures and steps in the process of making changes. The principals were committed to the innovation and believed that the methods and tools would help guide them through this journey. The participants attended training to use the Child Involvement Scale, Adult Engagement Scale and the Early Childhood Environmental Rating Scale to assess their programme standards. They themselves became familiarized with the procedure and learnt together with their peers and with me when they encountered problems. Guided by the methods and tools, they were aware of the journey and processes.

c) Infrastructural support

As described in Chapter II, Section 2.4.4, Whitaker (1993, p.63) discussed the resistance to change at both systemic and behavioural level. In this study, the action plans proposed by the pre-schools were indicators that the leaders were not focusing on systemic resistance. They focused more on behavioural resistance as they believed that the members' reactions, perceptions and assumptions would be the main barrier. The principals anticipated problems and resistance. However, they used their own emotional intelligence to solve their day-to-day problems and they focused on giving practical assistance such as providing additional resources, looking into deployment issues, gaining financial and emotional support from their management. These supports enabled the centres to go through the self-evaluation and development process more smoothly. However, in some centres, this support did not seem to resolve some resentment and unhappiness among some staff during the implementation of a self-evaluation

and development framework. Hence the adult engagement quality seemed to take a dip in the second year in these centres.

6.7.3 Enhanced Teachers' Capabilities and Skills

In Chapter II, Section 2.5.3, the theme on the need for continued training and professional development was described. In this changing world, pre-school teachers have to make efforts to continue upgrading their skills and expand their capabilities. In this study, all centres arranged for their staff to attend relevant workshops to equip their teachers with necessary knowledge and skills, especially on their observation skills and facilitation skills. In the reflection logs, it became evident that most teachers and principals expressed positive feeling about the training, especially on the use of the tools. The following are examples of the reflection and other comments from the teachers:

Comment 1:

T59 expressed that "the Child Involvement Scale, Adult Engagement Scale [AES] and Early Childhood Environmental Rating Scale [ECERS] have given me a new perspective and insight. AES taught us the various ways on how a teacher could be a pillar of strength and resource by just being supportive, approachable, open, warmth, [and] facilitating to higher level of learning and thinking" She was also of the view that "ECERS serves as a reflection on our teaching, leadership and administration style too. ... All these three tools really help us to create an atmosphere appropriate for pre-schoolers."

Comment 2:

T33 said that "observational anecdotes are important to prove that learning does takes place in different aspects." She also said that these "tools helped me evaluate my children as well as myself, in developing appropriate activities and enhancing the environment they are in. I also developed the learning centre with more challenging materials to engage the children. I also learned to improve and act upon the data collected for the best of the children in future."

Comment 3:

T26 shared that "I have learnt that the teacher's role as an observer is important in enhancing children learning." She continued to say "[These] assessment tools have made teachers realize their roles and responsibilities." She was pleased that "some teachers have used the tools for their routine observation on children. They are more confident in sharing children performance with the parents."

Comment 4:

Specifically, on the Child Involvement Scale, T15 commented that "the scale and its observation sheet are clear and easy to use" as it "helped me plan more appropriate activities for the children".

Comment 5:

T46 liked the Child Involvement Scale as it has "a structure that lists necessary details [helping teachers] to observe children's participation [in an activity]." She now believed that "changes and improvement are possible".

Comment 6:

T63 felt that "the three tools have helped me to become more confident when observing and assessing the children." She also noted that "collecting data and evidence help us to see what are our setbacks or our accomplishments so that we can further improve on the situation which in turn will benefit not only the children but the whole kindergarten."

Comment 7:

Though a few teachers (T31, T35, T49) felt that observation was a time-consuming activity, they found that the time was worth spending.

Comment 8:

A teacher (T56) expressed the view that she learnt not only the observation skills, but more importantly, to "respect each child as [an] unique individual … to communicate at [the] child's level, … and allow [the] child [the] opportunity to solve his [/her] own problem and [to] intervene [only] when necessary". Another teacher (T32) echoed a similar sentiment saying that besides observation skills, she also learnt that "documenting precise anecdotal [evidence]" is important.

6.7.4 Peer Learning and Collaborative Learning

In pre-school settings in Singapore, where small institutions run a pre-school like a cottage industry, there is always a constraint on their funding and manpower. Hence, not many teachers would have the opportunities to attend pre-service and in-service or professional development courses. As described in Chapter II, Section 3.4.3, collaboration and collegiality are also

key contributors to professional development as compared to the formal training courses.

In this study, members in the sample pre-schools had many open dialogue sessions, self-assessment and self-reflection hours to review their gaps and identify their strengths. Collaboratively, the members in the community worked out their improvement plans. By doing so, they shared ownership of the plans and the implementation efforts. This study has demonstrated that collaborative work using self-reflection strategies can be an effective means for professional development and quality improvement.

Teachers in these centres acknowledged the value of peer learning and collaborative learning.

One teacher (T22) reflected that "without this collaboration we would not have a sense of direction and work would be meaningless and our thoughts would be dry (no creativity)". She perceived that "every teacher's ideas and contributions are valued to bring about changes. To organize and work in a team spirit is a vital sign to accept changes and to move on to greater heights. … With openness to accept changes and challenges, my centre has attained a healthy environment to work with each other and we look forward to moving with zeal as we journey with our young ones."

As mentioned in Chapter II, Section 2.5.3, there is evidence to show that collaborative interaction contributes to professional growth and development of teachers (Darling-Hammond, 2006; Goodlad, 1990; Little, 1982; NPDCI, 2008). Studies by Murphy (2005) also show that collective and collaborative professional development experiences are worth adopting for school-wide improvement.

6.8 CHAPTER SUMMARY

The process of implementing the self-evaluation and development framework had resulted in the professional development of the participating educators. In their reflection the teachers reported the changes in their thinking, strategies and practices. They attributed the changes to their involvement, including the training on and the use of the Child Involvement Scale, the collection of child observation data, interpreting the data, and using the data to develop their lesson plans for improvement. The principals and the teachers felt that this systematic and practical procedure enabled them to become more competent and confident teachers.

With increasing support and direction for change given and ample learning opportunities, the capabilities, creativeness and skills of the individuals and groups in these pre-schools had been enhanced. Seeing the progress, improvement and positive learning outcomes, practitioners in the participating pre-schools had gained greater confidence in their self-improvement and centre improvement. Some of them had changed their beliefs and values in that they began to perceive the purpose of their actions. They were convinced that these changes yielded positive outcomes that could be aligned with their personal goals in life.

CHAPTER VII
DISCUSSION, IMPLICATIONS AND CONCLUSION

7.1 INTRODUCTION

In the last two chapters, the quantitative data and qualitative data that were collected from the participating pre-schools before and after implementing their self-evaluation process indicate that an improvement of the child involvement levels in these pre-schools is evident. Their improvement varied in degree and in areas. In terms of the quality of adult engagement, the quantitative data showed a declining adult engagement quality on 6 out of the 8 participating centres. A further discussion on the issues is presented in the following sections of this chapter.

This chapter also includes a discussion on the general application of the self-evaluation and development framework, the implications of the study and the possible future research directions that other researchers might be interested to explore further.

7.2 DISCUSSION ON MANAGING CHANGE

In this study, the quantitative data revealed that changes had taken place in the participating centres after implementing the self-evaluation and development framework. The quantitative data showed that the child

involvement levels in these centres had improved from Year I to Year II of the study period, but the improvement was not reflected in the adult engagement levels. The quatitative data however, revealed otherwise. The qualitative data described in Chapter VI, section 6.7 gave evidence of where the teachers had benefited from the process of implementing the framework.

Evidence from the qualitative data showed some factors that change agents had planned for in order to prepare and create change within their systems. Fullan and Stiegebauer (1991) found that teachers going through an innovation would be in a better position to develop meaning, after having an operational understanding and experience in making judgment about the innovation or change. As the evidence shows in the centres' reports in Chapter VI, the regulatory requirements, social and parental pressure prompted the pre-schools such as Centres A and B, to make changes and seek strategies to improve their quality services, so as to survive. In this study, the qualitative data supported the fact that the mandated change was probably a contributing factor involved in the principals' and teachers' initial interest in finding out about the approach and deciding on their participation in this study. Fullan & Stiegebauer (1991) noted that mandated change is necessary sometimes in order to stimulate change. Subsequently, adequate training often influences the initial interest as well as facilitate the implementation of the innovation.

However, Fullan's research (1982) proposed that mandated policy alone does not bring about successful educational change. This mandatory change may clash with the beliefs and values of teachers and the centres (Fullan & Stiegebauer, 1991). It is proposed that the feelings and emotions of the participants in this study were influenced by the effectiveness of the change. When the change was perceived as top-down, stronger resistance happened as evident in centres C and D. As pointed out in Chapter II, Section 2.4.4, Morish (1976), and Stoner and Freeman (1989) highlighted reducing

resistance by looking at meeting the needs of teachers in the change process.

In this study, it was evident that in the participating centres, the principals adopted a mix of the 'control' and 'influence' strategies (Bolam & Pratt, 1976) described in Chapter II, Section 2.4.4. Some leaders took the 'influence' approach by building a quality relationship among their staff through various communication means based on sharing and dialogues. This approach made it possible for the individuals and the centres to assess the quality status of their centres, assess the development and growth through a series of discussions, gain feedback and continue learning within the organisation. To manage resistance, Lindquist (1978), Fullan (1991), Rodd (2006) and Senge (1994, 1990) suggested mentoring, peer coaching, reflective practice, collaboration and other human relationship strategies. Lindquist (1978) advocated that the human relationship strategies were more effective as the teachers felt the need for the change and would be more willing to implement the innovation. Some leaders in these participating pre-schools adopted some of these strategies to manage tensions and conflicts created by the implementation of the framework.

However, some leaders did not take this approach, but chose in this research study to adopt a more 'controlling' approach and the teachers were not given sufficient opportunities to be involved in analysing the situation and solving the problems together. When the participants lacked a clear understanding of the adoption of the self-evaluation and development framework, they probably resisted implementing the change. The statements of resistance from some teacher participants were evident and quoted in the centres' reports in Chapter VI, Sections 6.2.2.4 and 6.3.2.4. These statements were of behavioural resistance as described by Whitaker (1993) in Chapter II, Section 2.4.4. Based on the qualitative data in the study, systemic resistance such as managerial capacity in some centres might also be another factor limiting the smooth implementation of the change process.

The qualitative data showed evidence that all teachers utilized the tools to assess their children' involvement levels and, indirectly, they evaluated their own teaching strategies. The quotes from some teachers presented in Chapter VI, section 6.7.2 showed that through the training, the teachers seemed to find that the fundamental principles behind the tools suited their beliefs; hence, they found time spent on utilising these tools was worthwhile. Fullan's (1982) research found that lasting change is usually the result of teachers believe that the change was worthwhile.

As a whole, this study showed evidence that the participating centres had more gain than loss in terms of quality of child involvement and at a broader sense, gained in the quality of adult engagement as more teacher participants became aware of what constituted a quality learning environment for quality child learning and what attributes were essential for quality teacher engagement.

7.3 GENERAL APPLICATION OF THE FRAMEWORK

As mentioned in Chapter IV, the debate on 'subjectivity 'and 'objectivity' of qualitative research is centred on the usefulness and applicability of the experiences of these selected cases to the general population. When applying a self-evaluation and development framework to other pre-schools that are interested in improving their quality programme for quality child's learning, the centres need to consider their unique settings and consider how the framework implemented in this research could be successfully implemented in their centres, so as to achieve their own goals.

A preliminary self-evaluation and development framework was given in Section 1.5.3, Chapter I that shows the four-phase cycle of evaluation. This initial framework was based on the EEL's model (Pascal, 1997a, 1997b). It served as a guide for the initial stage of the study. As the study progressed,

the experiences and the input from the participating pre-schools prompted me to modify the framework.

Figure 7.1 shows the modified diagram of the self-evaluation and development framework. This modified framework spells out the critical elements at each stage of the evaluation cycle as these elements would ensure a smooth and successful implementation of the framework were it to be used by other pre-schools.

The modified framework

There are two main components comprising this model. The first component refers to the ultimate goal of the cycle that aims to raise the quality of child learning, quality teaching and quality learning environment. Quality settings and quality teaching are the foundation for achieving quality learning. To achieve quality learning, it is crucial to ensure quality teaching and quality settings are in place. The path towards achieving the aim of quality improvement is to go through a cyclical process of self assessment and development. This process forms the second key component of the framework.

This self-evaluation process contains four phases. This study revealed that there were critical elements at each phase that would help reduce the barriers and ensure a smooth implementation of the self-evaluation and development framework in a pre-school.

a) Evaluation phase

Based on the literature (Pascal, 1997a, 1997b; Ramsden, 1997) and the evidence gathered from the participating pre-schools in this study, there are three key elements to ensure a quality assessment of a centre. The first is the quality documentation of the centre. The second is about quality

assessment of the centre by using validated measuring tools. The third is the quality conversations among members of the organisation in various settings. Evaluation of these three key elements will allow a centre to obtain an accurate picture of its quality profile.

b) Action planning phase

With the quality assessment data, the strengths and areas that the centre needs to attend to are identified. In the process of action planning, quality dialogue is necessary as it encourages members to be open, to clarify doubts and to suggest ideas for improvement. The action plans should be specific, measurable, achievable, realistic and tangible (SMART). Members will hence gain an ownership of the development and implementation of the plans.

c) Improvement Phase

Quality relationship building is the key to the success of implementing the improvement plan as there are likely to be conflicts, tensions and emotional fear among the members in the implementation phase. Flexibility and creativity of the leadership is crucial (Fullan, 2001). This process also requires strong infrastructure support, sufficient financial provision and structured monitoring by the leaders and management. There should be no ignoring of the evidence of actions and improvement that have to be collected to make a comparative analysis, so as to ascertain if the effort put in by the centre yields positive results.

d) Reflection Phase

At the end of the cycle, reflective practices of the individuals, the group and the centre help consolidate new knowledge and new skills that are acquired in the process of collective learning. Reflection on the skills,

knowledge and strategies, on changes in the perceptions, assumptions, practices, beliefs and attitudes of individuals is important. Reflective practices will add value to the profession, the organisation and the system as a whole. It is not an ending stage, but a starting point for another cycle of evaluation and improvement.

7.4 GENERAL DISCUSSION OF THE STUDY FINDING

7.4.1 Quality assessment is evidence-based and data-driven

An evaluation of any programme always starts with the assessment of the quality status of a setting. If the assessment is superficial and assessment data is not reliable, the assessment will not be valid and useful. It is like the common saying of 'rubbish in, rubbish out'. To collect quality data, the use of appropriate methods and assessment tools is crucial. In this study, the tools used to assess quality learning, quality adult interaction with children and quality settings have been validated in the early childhood field. Most importantly, these tools are grounded on sound fundamental beliefs of child development and learning (Harms, Clifford & Cryer, 1998; Pascal & Bertram, 1997a, 1997b; Laevers, 2005, 1994). Hence, pre-schools that are interested in implementing the framework could be assured of the validity and reliability of these tools for gathering reliable data. Another equally important factor for a quality assessment is quality of the assessors. As mentioned in Chapter II, Section 2.2, the values, beliefs and attitudes of assessors influence their interpretation of quality standards.

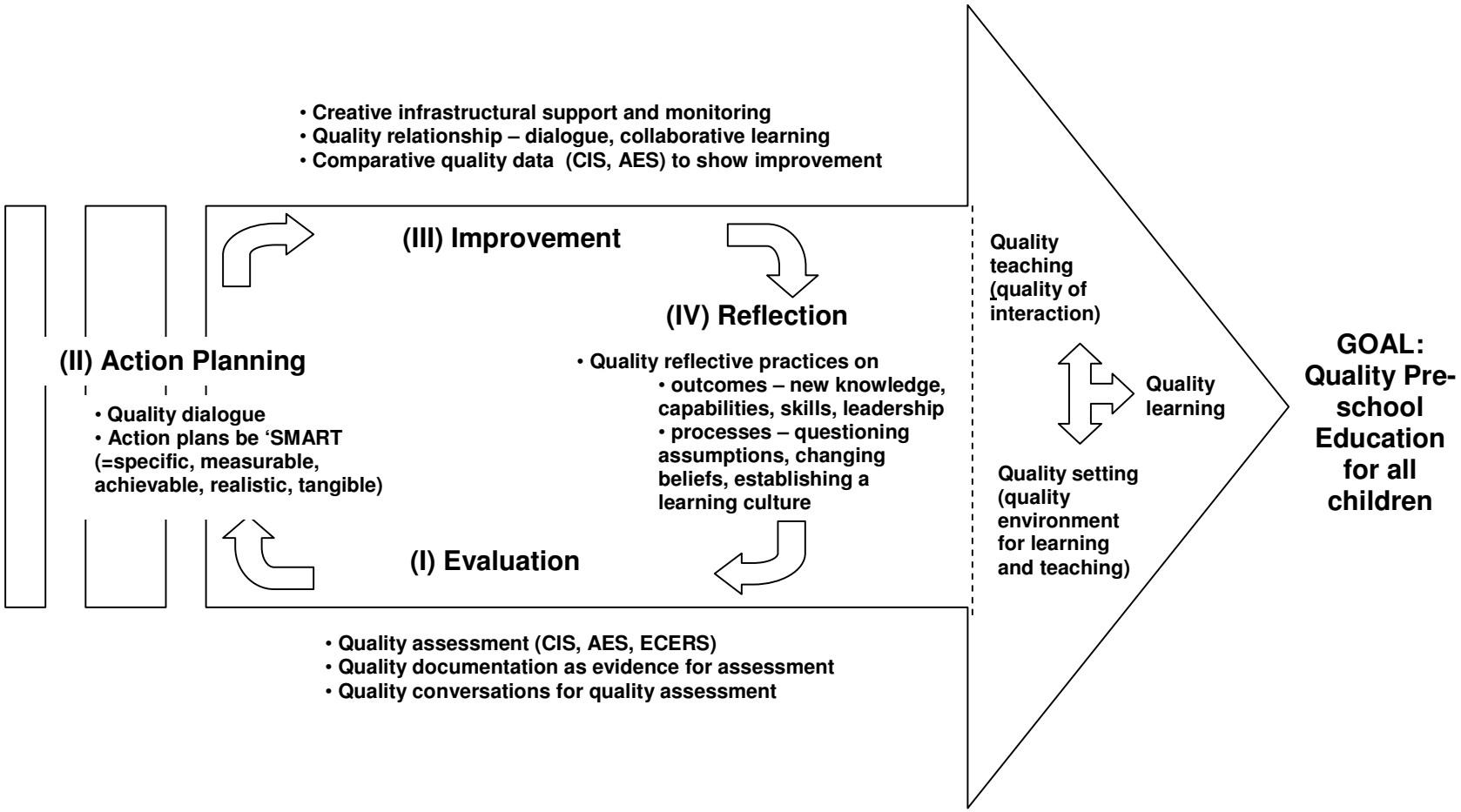


Figure 7.1: A modified self-evaluation and development framework

7.4.2 Reflective practices is to question assumptions and beliefs

Schon's (1987, 1983) studies of both teachers and learners have demonstrated that self-reflection is the key ingredient contributing to quality learning and performance, leading to continued growth over time (1983, p.23). To implement a self-appraisal model, it is essentially promoting a culture of reflection in an organisation. In the process of implementing this framework, all members in a pre-school should be encouraged and convinced of their involvement in this reflective process. Based on the experiences of the cases in this study, practitioners were given opportunities to observe their children's learning behaviours and their teaching behaviours in action. Through observation and recording of these behaviours, practitioners in this study became more aware of what happened in the process of teaching and learning. With the evidence found in this study, it became clear that some teachers started to question what and why they were doing what they did. They questioned their own practices for developmental appropriateness. Some teachers went one step further to try out new approaches and new strategies. These are examples that are aligned with Dewey's (1993) recognition of the value of reflective thinking. He said that "it makes possible actions with a conscious aim" (p.17) … it makes possible systematic preparations and inventions (p.18) … and it enriches things with meanings" (p.19).

7.4.3 Quality adult learning is through collaboration

Lambert *et al*. (1995) noted that "adults learn through the processes of meaning and knowledge construction, participation and reflection" (p.29). In the process of a self-evaluation cycle, practitioners are adult learners who gain new knowledge and new skills through collaboration and collegial learning with their peers. As discussed in Chapter I, in most pre-schools in Singapore, teachers are isolated workers who seldom have opportunities for

professional learning from their peers. Implementing a self-appraisal in a pre-school is indeed providing teachers with a common platform to discuss issues and concerns that all members see and feel every day in a more structured and open manner. In this process of deliberation, leadership is critical as there will be conflicts, disagreements and emotional fears that are barriers to innovation and improvement (Fullan, 2001, 1993; Rodd, 2006; Senge, 1994). The collaborative team approach is considered by many (Ebbeck & Waniganayake, 2003; Rodd, 2006) to be the most appropriate way of meeting the increasing demands of early childhood provision. Ebbeck and Waniganayake (2003) commented that "building effective teams is fundamental to early childhood practice" (p.195). Rodd (2006) also advocated that "a cohesive team is a key resource for the provision of quality childcare and education for young children" (p.146).

If a centre wants to develop teachers to take on leadership roles, the centre has to provide them with opportunities to be facilitators, presenters and mentors. In this study, most centres scheduled teachers to take turns in adopting the roles of facilitator, presenter and/or mentor at meetings, at sharing sessions and in community projects. The facilitators, presenters or mentors were not taken as people with positional power, but as people who can direct the processes to discuss the main concerns and issues of an organisation, or who can help facilitate the discussion to resolve differences and to reach a consensus for action. Through this learning process, the members became empowered and the organisation enhanced as a collaborative place where people care and become wiser.

7.4.4 Quality relationship needs an open dialogue

Collegial learning is not a common practice in pre-schools in Singapore. To promote collaborative learning, quality relationship building is the first step. Rodd (2006) noticed that "many early childhood practitioners

still regard conflict as an abnormal occurrence that is not supposed to happen if people get on reasonably well with one another" (p.105). In this study, the involvement that Centre C and Centre D experienced are examples of resistance whereas Centre A and Centre B required leadership to put in effort to build quality relationships within the organisation. Implementing the self-evaluation and development framework is essentially a strategy to effect change for improvement. It requires leaders and members to trust one another to provide the support and skills needed by the whole group (Fullan, 1993; Lambert, 1995a, 1995b). Rodd (2006) recognized the importance of effective communication of a leader. She quoted West's proposition that effective communicators "are able to put aside their own egocentric preoccupation with speaking and instead direct their attention and energy to listening for the meaning behind what the speaker is saying" (p.74). In the study, it was evident that quality relationship required an open dialogue among the members of the organisation. As one practitioner (T57) reflected "I learnt that environment is not only the physical environment but the human environment as well. A positive verbal environment plays an important role to build the child's self-esteem and the staff's boosting of morale too".

7.4.5 Strong infrastructure support signals commitment to actions

The self-evaluation and development framework involves an evaluation cycle that is not straightforward and takes time and effort to carry out. In this study, the pre-school principals and teachers were required to be proficient in observation skills. It also required the patience and commitment of the management board, the leaders and the teachers not just to carry out the steps, but to manage and handle unanticipated barriers, problems and issues along the way. Infrastructure support is therefore essential. In this study, three aspects became more important than others. They are funding, time scheduling and understanding.

The evidence shown in Centre A and Centre B is a good example of how a strong infrastructure support helped these centres change the teachers' perception of 'observation', initially as a 'stress' to a 'way of teaching life'. The management noted the need and hired relief staff to ease the stress during the intensive period of observation. With coaching and hands-on practices over time, observation was no longer a stress to many teachers. Following up with the child assessment through observation, these centres implemented a new format of assessment that required teachers to observe children regularly. Observation hence has become second nature to the teachers. Observation, even though it is perceived as part and parcel of a teaching career, has not been structurally and systematically carried out by teachers in most of the pre-schools in Singapore. In this study, with a clear goal and skill training, many practitioners not only acquired and practised their observation skills, but also became aware and were convinced as a teacher of the importance and the need for observation.

7.4.6 Section summary

Clearly, the key to the improvement of an organisation is a commitment to building the capacity of its people (Fullan, 2001, 1993; Rodd, 2006; Senge, 1994). Building a culture that systematically improves itself in response to continuing change in the environment is what the participating pre-schools experienced in the two years of the study period. External support, such as peers, the researchers and the professionals can act as catalysts in this process of change by providing training and consultation. However, successful centres make changes in ways that are specific to their circumstances and needs. The important thing is to start with small steps, involving members with respect and trust. When people open doors to each other and are given ample opportunities for discussions and disagreement, good relationships will be formed. Every member in the organisation

eventually becomes empowered to be leaders in their field of expertise and areas of responsibility.

7.5 GENERAL IMPLICATIONS OF THE STUDY

Using the self-evaluation and development framework and the experiences from the participating pre-schools in this study as a guide, there are some implications that are evident and these are now presented.

7.5.1 A need for valid and reliable tools for quality assessment

The use of three measuring tools in this study generated a strong sense of professionalism among the practitioners. The practitioners could relate the terms and vocabularies used in these tools to their day-to-day practices. They were also given a direction and steps to help move on to achieving the next level of quality standards. Hence, the search for tools that are appropriate to the users and the environment is necessary if pre-schools are to implement a self-assessment and development process for quality improvement in their services.

7.5.2 A need for tiered-training and mentoring for practitioners

The study involved a series of training and hand-holding sessions with the practitioners. There were teachers who were new and others who were veterans in the field. Among them, there were those who were very skilful, semi-skilled and unskillfully teachers. Hence, training and mentoring of these practitioners posed a great challenge to me and the pre-school leaders. A tiered and differentiated training with peer mentoring and guidance proved to be a good approach to enable as many teachers as possible to acquire the

necessary knowledge and skills for a smooth and successful experience in the cycle of evaluation.

7.5.3 A need for a strong support of professional training of assessors

This study yielded evidence that quality assessment relies not only on quality assessment data, but also on quality assessors. A reliable and valid assessment is the basis for the next step in the evaluation cycle. As mentioned in Chapter II, Section 2.2.2, Moss (1994) used an analogy of the big ruler – those assessors whose values, beliefs and interests influenced their interpretation and assessment of the quality standards of a setting. In Singapore, there is no such training provided except by individual researchers (Kwan, 2000) who trained the participants in their studies.

7.5.4 A need for a recognition of self-appraisal practices

A self-appraisal process is an on-going and long term process for professional development and quality improvement of a setting. It is ”an inside-out process which includes participation in leadership processes, governance, observations and inquiry, co-planning, coaching and new information - all of which are opportunities that involve authority, choice and responsibility” (Lambert, 1995a, p.55). Pre-schools, as educational entities, need recognition of their effort. Their effort for quality improvement needs recognition by the parents of their children, the general public, the regulatory authority and the professional bodies as the ultimate goal of a self-appraisal and development process is to improve child learning, which is also a common goal shared by all stakeholders.

7.6 RECOMMENDATIONS FOR FUTURE DEVELOPMENT

7.6.1 At regulatory and policy level, it is RECOMMENDED that:

A self evaluation and development model be designed and implemented to encourage as many pre-schools as possible to acquire the right attitudes and necessary knowledge and skills about the process of quality assessment. This process includes being proficient in observation skills, being competent in conducting assessment of their quality standards and being confident in making changes for improvement.

A scheme should be devised to recognise, celebrate and praise the efforts put in by the pre-schools that are systematically appraising their work and structurally putting in plans to rectify their shortcomings in order to improve their service standards. Recognition should also take a form of an innovation fund that encourages the centres with successful experiences to share their exemplary practices or the centres with good proposals that are going to venture into this process of evaluation for improvement.

If Singapore implements an accreditation scheme at some future time to encourage the achievement of higher quality services beyond that required by registration requirements, the proposed self-evaluation scheme outlined here be included.

7.6.2 At professional level it is RECOMMENDED that

Academics and research agencies expand their search for a range of reliable and practical tools that pre-school practitioners could choose from to appraise their centres based on their circumstances.

Professional bodies and relevant authorities focus their training and design their professional support mechanism to target training assessors, the training of pre-school leaders in the use of assessment tools and mentoring and coaching schemes to assist pre-schools in their evaluation journey.

Reseach be conducted focussing on testing the appropriateness, reliability and validity of employing these existing tools in the different cultural contexts in local pre-schools.

7.6.3 At individual pre-school level, it is COMMENTED that

A self-evaluation and development strategy be adopted so that personnel in the organisation can become managers who are receptive of change that is geared towards quality improvement.

A self-evaluation and development model is basically a strategy of analyzing and then managing the direction of change. In this age of constant change, individuals in an organisation have to learn to be flexible and versatile in handling change in their personal life, working life and professional life. Through a self-appraisal process, practitioners learn to be more open-minded and more receptive to change. Once they acquire necessary knowledge and skills through learning within the organisation, they will, over time, witness their own growth and development, which will build up their confidence and competence as a person. With the changed mind-set of the individuals, each pre-school would have expanded their potential capacity to move to another higher level of excellence.

7.7 POSSIBLE FUTURE RESEARCH

This study provided evidence that further research is necessary. Firstly, the research could be in the area of conducting psychometric testing for the assessment tools to be used in the local context. Secondly, the research focused on appropriate training models for pre-schools intending to adopt a self-evaluation process for improvement. The model may include mentoring schemes, formal training courses, coaching and specific skills related training. Thirdly, whilst the research aimed to study specifically how a leader transfers a centre from a traditional care and education centre to a progressive centre meeting the needs of tomorrow's world it had its limitations. Further research would be helpful in developing leadership skills and practices in Singapore's early childhood settings.

7.8 CONCLUDING REMARKS

It is not easy to be critical of pre-schools if one tries to appraise their programme quality by comparing it to a model case. To conclude my study experience, I would like to cite the reflection of three leaders who have expressed their views that provided me with the strength and vision that a self-evaluation and development framework, if applied with positive spirit, would improve the quality of pre-school services.

T49 said that "Teachers have changed now to believe that children can learn but they may progress at their own pace and the teacher's motivation determines the child' success." She continued to say that this evaluation cycle "… has provided us with the tools to guide us to [implement] better assessment or perhaps to push us to make an effort to work on it. Though we may have worked on a small sample, teachers get to realise that children can learn, and learn to learn with adults who provide the appropriate amount of interactions with well provisioned environment. It definitely requires effort to carry out this appraisal but it can lead to a whole new perception of a child's learning with a 2-minute observation".

T35 commented that "We need data and evidence to analyse/support our strengths and overcome our weaknesses. Self-appraisal/evaluation helps in collecting all these data and evidence. … With the appraisal/evaluation, teachers are more aware of their strengths and weaknesses. With the heightened awareness, teachers will bring a change in order to improve. This change will have impact on the change in the culture of the centre".

T57 said that "in the past, we are doing the things we have been doing year after year and it has become the practice and the culture of our kindergarten. But these tools have helped us do things differently for the benefit of the children. As we delve deeper into the subject we discover more aspects and

dimensions and we are not stuck or tied down but rather liberated to take up more challenges and this has been the hallmark of our kindergarten".

To end, I would like to share a quote from Ghandhi which has guided me throughout my research: "By acknowledging the truth in the collection and interpretation of data, leaders not only see issues in a broader context, they create integrity in the process" (Nair, 1997, p.113).

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Appendix A
Information sheet to the kindergarten advisory board

A CASE STUDY OF A SELF-ASSESSMENT AND DEVELOPMENT FRAMEWORK IN TEN KINDERGARTENS IN SINGAPORE.

Researcher: Loke-Chong Har Tshin (Mrs)
BEd –Early Childhood Education (Hons)
Dip Edu; BA (Hons); MLIS

Supervisor: Professor Marjory Ebbeck
School of Education
University of South Australia

Executive Officer of UniSA's Human Research Ethics Committee
Vicki Allen
PH: 08302 3118 Fax: 08-0802-0512

Dear Sir/Madam,
Chairman /Chairperson of the Kindergarten Advisory / Management Board,

I am currently undertaking a PhD study in Early Childhood Education with the University of South Australia (UniSA). The purpose of this research study is to ascertain whether or not a self-assessment framework can be made applicable to kindergartens in Singapore. Specifically, this research aims to help the participating kindergartens increase children's involvement in learning and raise the quality of teachers' engagement with children. It is anticipated that in the course of the centre involvement, professional growth of your principals and teachers will likely be enhanced.

As part of my study, classroom observations, interviews and group discussions with teachers and parents will be carried out. If child abuse is discovered during the process of the study, your centre and the relevant authorities will be alerted. Naturally the need for confidentiality will be stressed at all times.

Confidentiality of the data will be ensured. Numbers will be used in place of the names of participants on the record forms. No information that could lead to identification of individuals will be released. The researcher will retain all data collected for seven years in a secure area to comply with the Australian Freedom of Information Act. You may contact Vicki Allen (Tel: 08-83302-3118), the UniSA Ethics Officer, should you have any concerns about the ethics.

This study will take place from July 2005 to December 2006. Your centre participation in this study will be based on your principle's written consent. Your centre may withdraw from the study at any time. Whilst your permission may be given, should you not wish to be involved in any part of this study you may withdraw from the study at anytime without penalty.

Permission to participate in this study may be given by your principal's signing the consent form attached. A summary of the results can be obtained by writing to the researcher. Thank you for your support. Please do not hesitate to contact me (Mobile Tel: 96273128) or my supervisor, Professor Marjory Ebbeck (Tel: 08-8302-4432), should you have any questions or concerns.

Loke-Chong Har Tshin (Mrs), (15 July 2005)

Appendix B
Information sheet to the kindergarten principals and teachers

A CASE STUDY OF A SELF-ASSESSMENT AND DEVELOPMENT FRAMEWORK IN TEN KINDERGARTENS IN SINGAPORE.

Researcher: Loke-Chong Har Tshin (Mrs)
BEd –Early Childhood Education (Hons)
Dip Edu; BA (Hons); MLIS

Supervisor: Professor Marjory Ebbeck
School of Education
University of South Australia

Executive Officer of UniSA's Human Research Ethics Committee
Vicki Allen
PH: 08302 3118 Fax: 08-0802-0512

Dear Principal and Teachers of the Kindergarten / Centre

I am currently undertaking a PhD study in Early Childhood Education with the University of South Australia (UniSA). The purpose of this research study is to ascertain whether or not a self-assessment framework can be made applicable to kindergartens in Singapore. Specifically, this research aims to help the participating kindergartens increase children's involvement in learning and raise the quality of teachers' engagement with children. It is anticipated that in the course of your involvement as principals and teachers, your professional growth will likely be enhanced.

As part of my study, classroom observations, interviews and group discussions with teachers and parents will be carried out. If child abuse is discovered during the process of the study, your centre and the relevant authorities will be alerted. Naturally the need for confidentiality will be stressed at all times during focus group discussions.

Confidentiality of the data will be ensured. Numbers will be used in place of the names of participants on the record forms. No information that could lead to identification of individuals will be released. The researcher will retain all data collected for seven years in a secure area to comply with the Australian Freedom of Information Act. You may contact Vicki Allen (Tel: 08-83302-3118), the UniSA Ethics Officer, should you have any concerns about the ethics.

This study will take place from July 2005 to December 2006. Your participation in this study will be based on your written consent. You may withdraw from the study at any time and this will not affect your position at the centre. Whilst your permission may be given, should you not wish to be involved in any part of this study you may withdraw from the study at anytime without penalty.

Permission to participate in this study may be given by signing the consent form attached. A summary of the results can be obtained by writing to the researcher. Thank you for your support. Please do not hesitate to contact me (Mobile Tel: 96273128), your centre principal (Tel: xxxxx) or my supervisor, Professor Marjory Ebbeck (Tel: 08-8302-4432), should you have any questions or concerns.

Loke-Chong Har Tshin (Mrs)
(15 July 2005)

Appendix C
Information sheet to the parents of the participating students in the participating kindergartens

A Case Study of A Self-Assessment and Development Framework in Ten Kindergartens in Singapore.

Researcher: Loke-Chong Har Tshin (Mrs)
BEd –Early Childhood Education (Hons)
Dip Edu; BA (Hons); MLIS

Supervisor: Professor Marjory Ebbeck
School of Education
University of South Australia

Executive Officer of UniSA's Human Research Ethics Committee
Vicki Allen
PH: 08302 3118 Fax: 08-0802-0512

Dear Parents/Guardians of the Kindergarten/ Centre

I am currently undertaking a PhD study in Early Childhood Education with the University of South Australia (UniSA). The purpose of this research study is to ascertain whether or not a self-assessment framework, can be made applicable to kindergartens in Singapore. Specifically, this research aims to help the participating kindergartens increase children's involvement in learning and raise the quality of teachers' engagement with children.

As part of my study, classroom observations, of children and interviews and group discussions with teachers and parents will be carried out. If child abuse is discovered during the process of the study, the kindergarten / centre and relevant authorities will be alerted. Naturally the need for confidentiality will be stressed at all times during focus group discussions. Confidentiality of the data will be ensured. Numbers will be used in place of the names of children on the record forms. No information that could lead to identification of individuals will be released.

This study will take place from July 2005 to December 2006. Your child's participation in this study will be based on your written consent. Your child may be withdrawn from the study at any time and this will not affect your child's enrolment at the centre. Whilst parental permission may be given, should your child not wish to be involved in any part of this study she/he will not be expected or forced to do so.

Permission to participate in this study may be given by signing the consent form attached. Thank you for your support. Please do not hesitate to contact me (Mobile Tel: 96273128), your centre principal (Tel: xxxxx) or my supervisor, Professor Marjory Ebbeck (Tel: 08-8302-4432), should you have any questions or concerns.

Loke-Chong Har Tshin (Mrs)
15 July 2005

Appendix D
Consent form to obtain approval from the principal participants

A Case Study of A Self-Assessment and Development Framework in Ten Kindergartens in Singapore

Researcher: Loke-Chong Har Tshin (Mrs)
BEd –Early Childhood Education (Hons)
Dip Edu; BA (Hons); MLIS

Supervisor: Professor Marjory Ebbeck
School of Education
University of South Australia

Executive Officer of UniSA's Human Research Ethics Committee
Vicki Allen
PH: 08302 3118 Fax: 08-0802-0512

I, on behalf of the centre …… (name of the centre) hereby give consent for my centre to participate in the study. The purpose of the study and the commitment required of the study participants are stated in the information sheet.

I have read the information sheet that explains the nature and purpose of the research study. I understand and agree to give permission for the centre's children and teachers to be involved.

I understand that I can withdraw my centre from the study at any time and this will not affect the status of my centre now or in the future.

Whilst I agree and give permission for my centre's involvement in this research project, I understand that should my centre not wish to be involved in parts or all of this study, the centre will not be forced to do so.

_____	_____	_____
(Principal's Name)	(Principal's Signature)	(Date)

I certify that I have explained the study to the principal, that she/he understands what is involved and freely consents to participation.

_____	_____	_____
(Researcher's Name)	(Researcher's Signature)	(Date)

Appendix E
Consent form to obtain approval from the teacher participants

A Case Study of A Self-Assessment and Development Framework in Ten Kindergartens in Singapore.

Researcher: Loke-Chong Har Tshin (Mrs)
BEd –Early Childhood Education (Hons)
Dip Edu; BA (Hons); MLIS

Supervisor: Professor Marjory Ebbeck
School of Education
University of South Australia

Executive Officer of UniSA's Human Research Ethics Committee
Vicki Allen
PH: 08302 3118 Fax: 08-0802-0512

I ……. being a teacher at ……. (name of centre) hereby consent to participate in the study. The purpose of the study and the commitment required of me are stated in the information sheet.

I have read the information sheet that explains the nature and purpose of the research study. I understand and give permission for my involvement.

I understand that I can withdraw from the study at any time and this will not affect my position in the centre now or in the future.

Whilst I agree and give permission for my involvement in this research project, I understand that should I not wish to be involved in parts or all of this study, I will not be forced to do so.

_____	_____	_____
(Teacher's Name)	(Teacher's Signature)	(Date)

I certify that I have explained the study to the teacher, that she/he understands what is involved and freely consents to participation.

_____	_____	_____
(Researcher's Name)	(Researcher's Signature)	(Date)

Appendix F
Consent form to obtain approval from the parents of the participating students in the kindergarten

A Case Study of A Self-Assessment and Development Framework in Ten Kindergartens in Singapore.

Researcher: Loke-Chong Har Tshin (Mrs)
BEd –Early Childhood Education (Hons)
Dip Edu; BA (Hons); MLIS

Supervisor: Professor Marjory Ebbeck
School of Education
University of South Australia

Executive Officer of UniSA's Human Research Ethics Committee
Vicki Allen
PH: 08302 3118 Fax: 08-0802-0512

I ……. being the parent / guardian* of …….. (name of child) hereby give consent for my child to participate in the study. The purpose of the study and the commitment required of my child are stated in the information sheet.

I have read the information sheet that explains the nature and purpose of the research study. I understand and agree to give permission for my child to be involved.

I understand that I can withdraw my child from the study at any time and this will not affect my child's enrolment or status now or in the future.

Whilst I agree to and give permission for my child's involvement in this research project, I understand that should my child not wish to be involved in parts or all of this study, she/he will not be forced to do so.

_____	_____	_____
(Parent's Name)	(Parent's Signature)	(Date)

_____	_____	_____
(Child's Name)	(Parent's Signature)	(Level/ Year)

I certify that I have explained the study to the parent / guardian*, that she/he* understands what is involved and freely consents to participation.

_____	_____	_____
(Principal's Name)	(Principal's Signature)	(Date)

* delete whichever inappropriate

Appendix G
Letter to the parents attending Focus Group Discussion

UniSA letterhead

Researcher: Har Tshin Loke
Supervisor: Professor Marjory Ebbeck
Executive Officer Human Research Ethics Committee: Ms V Allen

Dear Parent/Guardian

I am undertaking a investigation of "The Early Effective learning (EEL) self assessment and development framework in ten kindergartens in Singapore" for my PhD, at the University of South Australia.

Specifically, this research aims to help participating kindergartens increase children's involvement in learning and raise the quality of teacher's engagement with children. As part of my study, classroom observations, interviews and group discussion with parents and teachers will be carried out.

Given your child's 'participation in this study, I would be most grateful if you would also volunteer to spare the time to assist in this research, by taking part in a focus group to discuss certain aspects of this study. No more than one hour of your time on one occasion over the course of the study will be required.

Be assured that any information provided will be treated in the strictest confidence and none of the participants will be individually identifiable in the resulting report or other publications. You are, of course, entirely free to discontinue your participation at any time or to decline to answer particular questions.

Any queries you may have concerning this project should be directed to me at the address given above or by telephone on (9627 3128 Mobile).

This research project has been approved by the University of South Australia Human Research Ethics Committee. The Executive Officer of this committee, Ms V Allen can be contacted on 83023118 to provide independent information about ethics.

Thank you for your attention and assistance.

Yours sincerely,

Loke-Chong Har Tshin (Mrs)
University of South Australia.

Appendix H
Effective Early Learning Programme: Child involvement observation sheet

Child Involvement observation sheet: Form and Sample Records

Name of Kindergarten: ……
Name of Child: ……..
Area of Special Education Needs (if applicable)
No of Children Present: ……

Observer: ……
Sex:…. Age: (DoB): ……..
……..……
No of Adults Present: ……

CD=Creative Development; KW=Knowledge of the World; MA=Math & Numeracy; LL=Langauge & Literacy; MS=Moral & Spiritual Development' PS=Personal and Social Awareness; PD= Physical Development

	INVOLVEMENT LEVEL					CD	KW	MA	LL	MS	PS	PD
Description of 2 minutes periods	5	4	3	2	1							
TIME												
Date/ Time observed: aaxxxx, 0901 – 0903h While colouring the animal pictures, she is chatting with peers. Peeping at a girl colouring brown, she chooses a brown colour pencil to colour the tortoise. Her friend cried out' you! Copycat!'. She denied and bites her fingers, turning to look at the displays on the wall just behind her.												
TIME												
Date/ Time observed: bbxxxx, 1000-1002h On a maze board, she holds the magnetic pen trying to fish out the metal balls from one site to the others, following a path that leads to the end point. She holds the magnetic pen tightly, dragging the metal balls along the path with much strength. Many balls drop off along the path, some fail to reach the target. She looks frustrated, mumbling to her friends.												
TIME												
Date/ Time observed: ccxxxx, 0950-0952 She looks happy and shouted 'Yah. I never got into this centre before'. She puts on a hat and a pink towel rope wrapping round her. Walking towards the capboard, she takes out a cup and a small bottle, pretending to pour something (sugar) into the tea cup. She walks towards the teacher, offering the cup of tea to her. She walked back again after teacher said TK.												

(Pascal, C. & Bertram, A.D., 2004)

Appendix I
Signals of involvement for the child Involvement observation sheet

Signals of Involvement

a. **Concentration:** The involved child is deeply engrossed and nothing can distract him/her.

b. **Energy:** The involved child puts in full energy and effort in doing the task by displaying behaviour such as using full force when he/she is playing with a mechanical device.

c. **Creativity:** The involved child demonstrates that he/she is cognitively at the 'edge of his/her capabilities' (Laevers, 1994). The child also exhibits abilities to integrate knowledge, processes and skills in a creative and logical manner.

d. **Facial Expression and Posture:** The body language of a child is a good indicator of involvement. Visible cues include 'dreamy look', 'intense eyes', 'concentration', 'boredom', etc.

e. **Persistence:** The involved child displays concentration in wanting to continue with the task.

f. **Precision:** The involved child is very meticulous and attentive to small details.

g. **Reaction Time:** The involved child is alert and reacts quickly to stimuli introduced during an activity.

h. **Language:** The involved child at times uses language to express his/her enjoyment and a sense of accomplishment.

i. **Satisfaction:** The involved child displays a sense of satisfaction and contentment with his/her achievement. This is evident through explicit expression, verbally and/or non-verbally.

(Signals were summarised by the researchers and teachers in the Experiential Education project led by Professor Ferre Laevers in 1994.)

(Pascal, C. & Bertram, A.D., 2000)

Appendix J
Child Involvement 5-point scale for the observation sheet

Child Involvement 5-Point Scale

(to be read in conjunction with the signals for involvement in Appendix 9)

Level 1: Low Activity

Activity at this level can be simple, stereotypical, repetitive and passive. The child is absent and displays no energy. There is an absence of cognitive demand. The child characteristically may stare into space. N.B. This may be a sign of inner concentration.

Level 2: Frequently Interrupted Activity

The child is engaged in an activity but half of the observed period includes moments of non-activity, in which the child is not concentrating and is staring into space. There may be frequent interruptions in the child's concentration, but his/her involvement is not enough to return to the activity.

Level 3:Mainly Continuous Activity

This child is busy at an activity but is at a routine level and the real signals for involvement are missing. There is some progress but energy is lacking and concentration is at a routine level. The child can be easily distracted.

Level 4:Continuous Activity with Intense Moments

The child's activity has intense moments during which activities at Level 3 can come to have special meaning. Level 4 is reserved for the kind of activity seen in those intense moments, and can be deduced from the involvement signals. This level of activity is resumed after interruptions. Stimuli from the surrounding environment, however attractive, cannot seduce the child to abandon the activity.

Level 5: Sustained Intense Activity

The child shows continuous and intense activity revealing the greatest involvement. In the observed period not all the signals for involvement need be there, but the essential ones must be present: concentration, creativity, energy and persistence. This intensity must be present for almost all the observation period.

(Pascal, C. & Bertram, A.D., 2000]

Appendix K
Adult engagement scale

Adult Engagement Scale

Engaging Qualities (Point 5)	Totally engaging to totally non-engaging*					Non-Engaging Qualities (Point 1)
	5	4	3	2	1	
Sensitivity – The adult - is warm and demonstrates affection - makes positive body gestures and eye contact - praises effort and achievement - empathizes with the child's needs and concerns - listens to and responds to the child and includes child in discussion						Sensitivity - is cold and distant - praises indiscriminately - puts the child down, criticizes and rejects - confirms failure - does not empathise with child's needs and concerns - lacks responsiveness and does not listen - speaks to others about child as if child is not there
Stimulation – The adult - presents activities as enjoyable and motivating - is culturally and developmentally appropriate - is open, accommodates and shares in child's interests - encourages child t o use their senses - links activities with the rest of the child's play - provides flexible routines enabling prolonged play.						Stimulation – The adult - does not motivate the child - presents activities as chores - is closed and does not accommodate and share in child's interests - explanations are vague and confusing - suppresses child's conversations and thinking - provides ritualized and prolonged routines
Autonomy – The adult - encourages child to be responsible for their actions - facilitates self management and empowerment of the child - enables child to choose and supports child initiated ideas - provides opportunities for experimentation - encourages child to bring their activity to a natural conclusion - encourages the child to negotiate conflict and rules.						Autonomy – The adult - dominant or 'laissez-faire' - takes responsibility rather than enabling child to take responsibility - gives child no room for choice or experimentation - allows no negotiation - dis-empowers and restricts self management of the child - rigidly enforces rules and routines

* 5 = Totally engaging qualities; 4 = Mainly engaging qualities but some evidence of non-engaging qualities; 3 = Neither engaging or non-engaging qualities predominate; 2 = Mainly non-engaging qualities but some evidence of engaging qualities; 1 = Totally non-engaging qualities

(Pascal C. & Bertram, A.D., 2004)

Appendix L
Adult engagement observation sheet

Adult engagement observation sheet

Name of setting ……
Observer …….
Date …….
Name of adult ……. Sex ……
Total No of children present ……. No of adults present ……..
No of SEN children present …….

AM / PM		Point*					
Description of each 2 minutes period		5	4	3	2	1	NE
Time	Sensitivity						
	Stimulation						
	Autonomy						
Time	Sensitivity						
	Stimulation						
	Autonomy						
Time	Sensitivity						
	Stimulation						
	Autonomy						
Time	Sensitivity						
	Stimulation						
	Autonomy						

* 5 = Totally engaging qualities;
4 = Mainly engaging qualities but some evidence of non-engaging qualities;
3 = Neither engaging or non-engaging qualities predominate;
2 = Mainly non-engaging qualities but some evidence of engaging qualities;
1 = Totally non-engaging qualities;
NE = no evidence, e.g. when the teacher is dealing with non-classroom activities, such as a parent visiting the class while observation is on.

(Pascal C. & Bertram, A.D., 2004)

Appendix M
Kindergarten background survey form (Part I)

Part I: BACKGROUND INFORMATION
(to be filled by the principal/ supervisor/ branch administrator)

1. Name of Institution		Address	
2. Year starting operation		3. Daily operation hours	
4. No of children in each age/ class groups	K2 (5-6 yrs old) =	K1 (4-5 yrs old) =	Nursery (3-4 yrs old) =
	Pre-Nursery (3 yrs old and below) =	Am session = Pm session =	Boys = Girls =
5. Approximately what percentage of the children in your centre in each ethnic group?		Chinese = %	Malay = %
		Indian = %	Others = %
6. Approximately what percentage of children in your setting has special education needs and disabilities?		= %	Pl specify:
7. Approximately what percentage of your children's families are in the residential types below:			
HDB-1 or 2 Room type = %	HDB-3Room type = %	HDB-4 or 5 Room type = %	Private properties (landed houses, condominiums, or apartments) = %
8. Approximately what percentage of your children's families are not EL speaking? (%)			
9. Staffing	Principal / Supervisor =	Teacher =	Teacher aides =
	Admin support staff =	Total employed staff =	Number of volunteers who offer regular help =
10. Academic qualifications of staff	Below 'O' =	'O' level holder =	'A' level holder =
	Non-ECE Diploma holder =	Non-ECE graduate holder =	Non-ECE post-graduate holder =
11. Training status of staff	Number trained=	Number untrained=	
	ECE graduate holder =	ECE post-graduate holder =	ECE diploma holder (DPEL) =
	ECE diploma holder (DPET) =	CPT holder =	CPT trainees =
12. Adult-child ratio / level	K2 (1 :)	K1 (1 :)	Nursery (1 :)
	Pre-Nursery (1:)		
13. Children have access to equipment and facilities (tick if available)			
place for children belonging	Quiet area	Child-size toilets	Areas for displays
Water play equipment	Sand play area/ equipment	Audio-visual equipment	Computers/ IT
Cooking	Woodwork	Small construction eg. Duplo	Construction, e.g. large blocks
Musical instruments	Investigation of natural world, eg. microscope, thermometers	Home corner/ imaginative play area	Miniature world, e.g. animals, insects
Books	Art /creative materials	Writing /scribbling area	Others – pl specify
14. Children have access to outdoor/ physical related activities (tick if available)			
Outdoor garden/ park	Forest adventure	Climbing frame, slide, swings	Physical play equipment – balls, skipping ropes, etc
Others – pl specify:			

Appendix M (Cont'd)
Kindergarten background survey form (Part II)

Part II: PROGRAMME INFORMATION

Domain	Centre's Responses (brief information)
Aims and Objectives 1. What are the aims and objectives of this centre for all children?	
2. How are the aims communicated and shared?	
Learning and Teaching Strategies 3. Is the 'Nurturing Early Learners", a curriculum framework suggested by MOE, used for monitoring and developing the curriculum?	
Planning, Assessment and Record Keeping 4. How is learning for children planned?	
5. How is learning assessed?	
6. How is learning recorded?	
7. How does the centre identify and support children who have special educational needs?	
Teaching Staff 8. How does the centre create a positive ethos and build your team?	
9. How does the centre recruit and retain good workers?	
10. How does the centre appraise staff and provide them feedback?	
11. What are staff aspirations?	
12. How does the centre support their aspirations?	
Physical Environment 13. What are the strengths of the physical environment of the centre?	
14. What are the weaknesses?	
Relationships and Interaction 15. What is the ethos of your centre?	
16. How is this achieved?	
17. How do you address inappropriate child behaviors?	
Equal Opportunities 18. What policy does the centre have for all children to access equal opportunities regardless of race, religions, gender, physical or learning disabilities?	
Parental Partnership, Home and Community Liaison 19. What policy and actions does the centre have for parental partnership?	
20. Is there a formal complaints procedure? 21. How is it made known to parents?	
22. What information do parents receive on policies, procedure and child's progress?	
23. What help does the centre give to parents supporting their children's learning at home?	
Management, Monitoring and Evaluation 24. What management structures and strategies are in place within the setting to ensure programme quality for children?	
25. How do you use the findings from evaluation?	
26. How does the centre involve teachers in the process of progr	
State the unique features of your centre that you are proud of.	
State the constraints faced by your centre that hinder its development.	
Describe in brief your vision of this centre.	

Submitted by: _____ Date: _____

[Thank you for your effort and information. Contact me at 96273128 if you need clarifications.]

Research study – self assessment and development frameworks, Sep/ Oct 2005

Appendix N
Questionnaire for teachers

QUESTIONNAIRE FOR INDIVIDUAL TEACHERS
(to be filled by the principal and individual teachers)

1. Name of institution				
2. Name: (Pl give only initials)			**3. Gender: (pl circle the suitable one) M / F**	
4. Age group: (Pl tick suitable one)	Below 20 yrs old		21 – 30 yrs old	
	31 – 40 yrs old		41 – 50 yrs old	
	51 – 60 yrs old		61 yrs old and above	
5. Academic qualification: (Pl tick suitable ones)	Below O level		O Level	
	A Level		Non-ECE diploma	
	Graduate		Post-graduate	
6. Professional qualification (pl tick & indicate year attained)	CPT trainee (Yr:)		CPT (Yr:)	
	DPEL (Yr:)		DPET (Yr:)	
	ECE Degree (Yr:)		ECE postgradate (Yr:)	
7. No of year of working	Years of working in this centre =		Years working in early childhood field =	
8. No of classes taught in 2005	K2 =	K1 =	Nursery =	Pre-nursery =
9. Subject taught: - General (EL, MT, all)				
- General (all EL learning areas /subjects)				
- Specialized area/s (MT, music, art & crafts, etc. Pl specify)				
10. In service training opportunities	No of training sessions attended in 2004-05:		Areas of training in the 2004 & 2005	
	No of training hours attended in 2004-05:			
11. Why do you want to be a educator in early childhood field?				
12. Thinking about your work, comment on the areas that: (a) give you the greatest satisfaction. (b) give you the least satisfaction.				
13. Do you think you will continue with this work for another 5 years or more? Why?				
14. What are the mission and vision of the centre?				
15. Are the mission and vision aligned with your belief?				

Submitted by: (Pl give initials) _____ Date: _____

[Thank you for your effort and information. Contact me at 96273128 if you need clarifications.]

Research study – self assessment and development frameworks, Sep/ Oct 2005

Appendix O
Reflection log for kindergarten principals and teachers

Self-Appraisal as a Means for Improvement
Reflection log for Kindergarten principals and teachers

Name of institution		
Name: (optional)		**Date:**

Question	**Responses / Views** Give time and thought to what you write.
Use of tool: Child Involvement Scale (CIS)	
1. What do you now understand best about this tool – CIS?	
2. How did the CIS help you to improve the centre?	
3. What did you expect to learn before training on the use of the tool?	
4. What did you actually learn, and why?	
5. If you use CIS again, what would you do differently? Has your way of thinking changed?	
Use of tool: Adult Engagement Scale (AES)	
6. What do you now understand best about AES?	
7. How did the AES help you to improve the centre?	
8. What did you expect to learn before training on the use of the tool?	
9. What did you actually learn, and why?	
10. If you use AES again, what would you do differently? Has your way of thinking changed?	
Use of tool: Early Childhood Environmental Rating Scale (ECERS-R)	
11. What do you now understand best about this tool ECERS-R?	
12. How did the ECERS-R help you to improve the centre?	
13. What did you expect to learn before training on the use of the tool?	
14. What did you actually learn, and why?	
15. If you use ECERS-R again, what would you do differently? Has your way of thinking changed?	
Involvement in the Self-Appraisal Exercises in Y2005 and Y2006	
16. What are bits of learning, reading or training stick in your mind? What will you remember in a year, 5 years?	
17. What new skills have you gained? Please list them.	

Question	Responses / Views Give time and thought to what you write.
18. Did you actually use these skills?	
19. Did you change your beliefs/ values? What are they?	
20. Did you notice that your teachers have changed their beliefs/ values? What are the changing beliefs/values?	
21. Was the self-appraisal process worth your time? Do you feel good about it?	
22. How do you feel now at the end of conducting a self-appraisal exercise in your centre?	
23. What are you proud of? Compare your accomplishments with what you hoped for and expected at the start of the self-appraisals using the tools introduced to you?	
24. Self-appraisal/evaluation can be a means to help bring about a **change in the culture** of your centre. Do you agree? Why?	Yes / No (circle your opinion). Reason/s:
25. Methods of self-appraisal/ evaluation, e.g. technique of classroom observations, are necessary as they help collect data and evidence to analyse our strengths and weaknesses. Do you agree? Why?	Yes / No (circle your opinion). Reason/s:
26. Has self-appraisal/ evaluation provided you a means to learn about your centre and to organise change?	
27. How does the self appraisal/evaluation allow you to know where your centre is now, what your centre is achieving and where your centre is going to move forward?	
28. Evaluate your participation in this study.	

THANK YOU FOR YOUR KIND ASSISTANCE AND SUPPORT

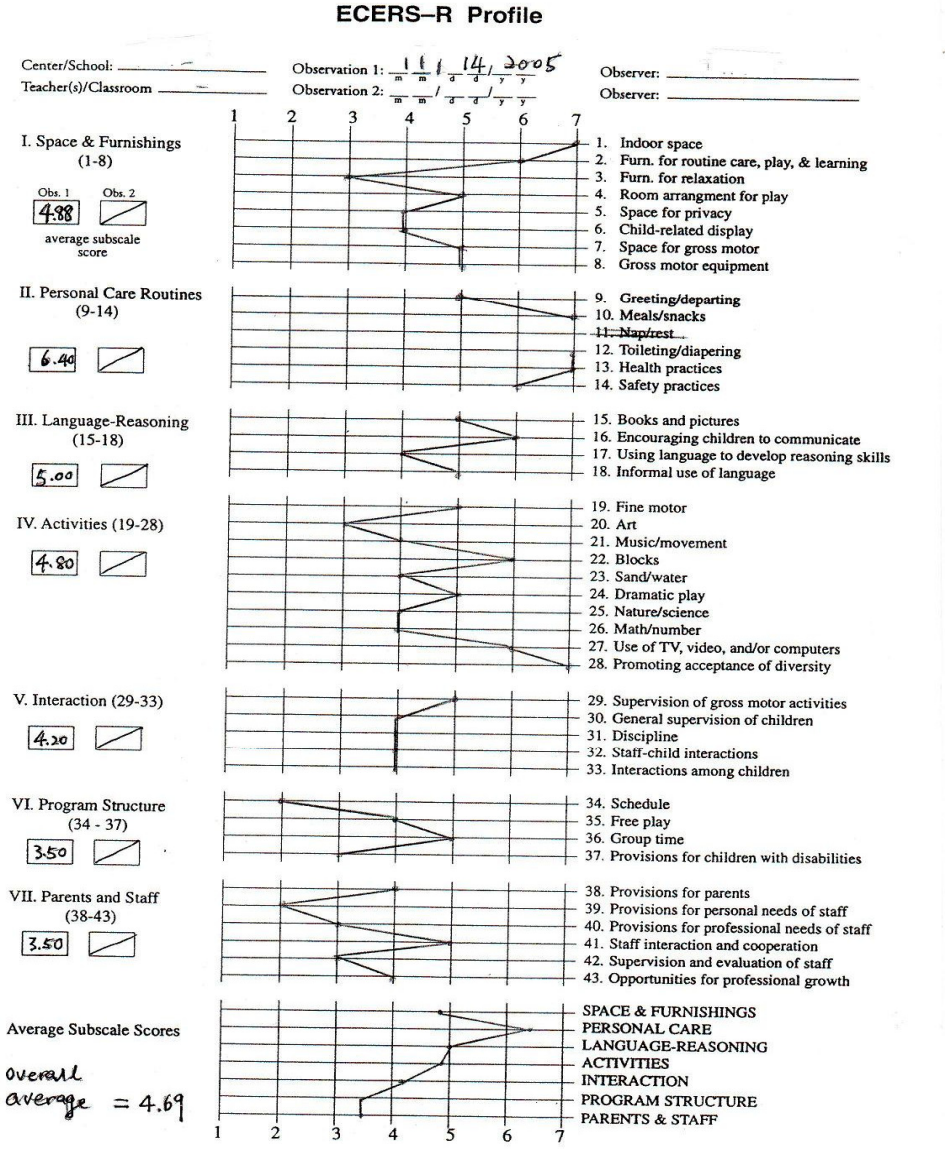
Appendix P
Overview of the key scale, subscales and items of the ECERS-R tool

The ECERS-R consists of 43 items organized into 7 sub-scales as follows:

Space and Furnishings	1. Indoor space
	2. Furniture for routine care, play and learning
	3. Furnishings for relaxation and comfort
	4. Room arrangement for play
	5. Space for privacy
	6. Child-related display
	7. Space for gross motor play
	8. Gross motor equipment
Personal Care Routines	9. Greeting/departing
	10. Meals/snacks
	11. Nap/rest
	12. Toileting/diapering
	13. Health practices
	14. Safety practices
Language-Reasoning	15. Books and pictures
	16. Encouraging children to communicate
	17. Using language to develop reasoning skills
	18. Informal use of language
Activities	19. Fine motor
	20. Art
	21. Music/movement
	22. Blocks
	23. Sand/water
	24. Dramatic play
	25. Nature/science
	26. Math/number
	27. Use of TV, video, and/or computers
	28. Promoting acceptance of diversity
Interaction	29. Supervision of gross motor activities
	30. General supervision of children (other than gross motor)
	31. Discipline
	32. Staff-child interactions
	33. Interactions among children
Program Structure	34. Schedule
	35. Free play
	36. Group time
	37. Provisions for children with disabilities
Parents and Staff	38. Provisions for parents
	39. Provisions for personal needs of staff
	40. Provisions for professional needs of staff
	41. Staff interaction and cooperation
	42. Supervision and evaluation of staff
	43. Opportunities for professional growth

(Harm, T., Clifford, R.M., & Cryer, D., 2007)

Appendix Q
Sample ECERS profile of a centre



Appendix R
Ethics Approval letter

Vicki Allen

From: Vicki Allen
Sent: Wednesday, 15 June 2005 12:01 PM
To: 'Har Tshin Loke'
Cc: Marjory Ebbeck; Sharon Russo
Subject: Ethics protocol P109/05 "A case study of the Early Effective Learning (EEL) self-assessment and development framework in ten kindergartens in Singapore".

Importance: High

Attachments: Conditions.March 2004.doc

Dear Hartshin

Re: **Ethics protocol P109/05 "A case study of the Early Effective Learning (EEL) self-assessment and development framework in ten kindergartens in Singapore".**

Thank you for providing the amendments and/or additional information requested by the Chairperson of the University's Human Research Ethics Committee (email dated 26 May 2005).

I am pleased to advise that your protocol has been approved and you can commence your research.

Please regard this email as formal notification of approval.

Ethics approval is always made on the basis of a number of conditions detailed in the attachment; it is important that you are familiar with, and abide by, these conditions. It is also essential that you conduct all research according to UniSA guidelines, which can be found at http://www.unisa.edu.au/res/ethics/default.asp

Best wishes for your research.

Regards, Vicki



Conditions.March 2004.doc (33 ...

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