

Early Years Education in the Primary Years Programme (PYP): Implementation Strategies and Programme Outcomes

Final Report

April 2014



International Baccalaureate Organisation

Prepared by the School of Education, Deakin
University

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Executive Summary

While there is a growing body of evidence on the processes and outcomes of International Baccalaureate (IB) programmes, the Early Years stage (for preschool children aged 3-6 years) of the Primary Years Programme (PYP) is a new area of research. There is a sense that the best way (or ways) to do Early Years programmes is still an open question. This reflects the wider picture of early childhood education, where new policies and frameworks, and challenges to traditional approaches, are evident in many countries. Researchers in the School of Education at Deakin University were contracted by the International Baccalaureate Organisation (IBO) to conduct a study into implementation strategies and programme outcomes in *Early Years* programmes.

The study involved evaluating processes and outcomes in four Early Years programmes, two in Singapore and two in Australia, through intensive mixed methods case studies. Using a *Mosaic* approach, the researchers aimed to create a detailed picture of each programme from different perspectives. They collected rich qualitative data on programme processes and outcomes through classroom observations and discussions with educators. Children's perspectives on learning and activities within their programmes, as expressed through drawings and writing, were collected from the two Singapore sites.

There was a particular focus on the following: children's inquiry-led and play based learning; development of Learner Profile Attributes; the quality of the indoor and outdoor learning environments, and their role in supporting children's learning and development. Interviews were conducted with educators, coordinators, and parents, to explore their perspectives on the programmes. Quantitative data was also collected through assessments of children's literacy (*Early Literacy in English Tools*), developmental school readiness (*Who am I?: Developmental Assessment* (de Lemos & Doig, 1999)) and learning skills (*Learning Skills* section of the *Social-Emotional Wellbeing Survey* (ACER, 2013)). These data were used for comparison of outcomes between sites and with larger population samples. The study also evaluated how each of the Early Years programmes aligned with relevant national curriculum frameworks.

Key findings of the study included the following:

- Three of the preschools (two in Australia and one in Singapore) ran Early Years programmes that appeared to support the development of Learner Profile Attributes through inquiry-led learning and play-based approaches. Learning environments at these preschools were rich and stimulating, and integrated the outdoors and the natural world.
- One of the Singapore preschools (S2) had only recently moved to offering the Early Years stage of the PYP, and appeared to be still grappling with the complexities and demands of implementing inquiry led and play based approaches. Researcher observations and staff comments suggested that further professional development and support from IBO would better enable staff to fully implement IB PYP principles in their programme.
- Using selected *Early Literacy in English Tools (ELET)* the research team was able to obtain a gauge of the overall literacy skills of the students across the different sites and see how these levels might compare across sites and national setting. Broadly speaking, the literacy levels at all sites were fairly developed. Students from all sites operated at literacy levels at or better than what would typically be expected for their age groups. Preschool students from the Singaporean sites with the average student age of 6 were performing at Prep (5-6 years old, AusVELS Foundation) or Year 1 (6-7 years old, AusVELS Level 1) levels. The pre-school students from the Australian sites with the average student age of 5.5 were performing at pre-school (4-5 years old, towards AusVELS Foundation) or Prep (5-6 years old, AusVELS Foundation) levels. The differences between the Singapore and Australian programmes are at least partly attributable to age differences, with Singapore students being on average 6 to 10 months older than the Australian students. Qualitative data, however, suggests that the greater emphasis on literacy in the Singapore programmes also played a role in these findings.
- On a test of developmental school readiness, the *Who am I: Developmental Assessment* (de Lemos & Doig, 1999), children in the PYP Early Years component in both Australia and Singapore performed at levels equal to or better than expected for their age, in comparison with the *Who am I* Australian normative sample. However, results were not equal across all four programmes, with higher outcomes from the

Singapore programmes. Based on qualitative data from classroom observations and educator interviews, the researchers hypothesise the greater emphasis on literacy and numeracy in the Singapore programmes as a factor in this finding.

- Teachers' assessments of children's learning skills, using a section of the Social-emotional Wellbeing Survey (ACER, 2013) showed that children in both the Australian and Singaporean Early Years programmes were significantly more likely than an All Schools sample to be assessed as having high levels of learning skills. It is notable that the Australian preschool children performed particularly strongly on this measure, designed for children in the first two years of school with a typical age range of 5-7 years.
- Educators at three of the preschools were articulate and reflective about their Early Years programmes, valuing inquiry led and play based learning, and confident that they were supporting Learner Profile Attributes, and preparing children for entry to school. Educators at one of the Singapore preschools (S2) were positive about the PYP Early Years programme and inquiry led learning, but expressed some uncertainties about implementing it in practice.
- Many of the educators had experience of the Reggio Emilia approach, and saw the PYP Early Years programme and Reggio Emilia as very much aligned. Coordinators, with one exception, held similar views.
- Through their drawings and writings, children at one of the Singapore preschools (S1) demonstrated awareness of their own learning and were able to articulate where they were acquiring specific Learner Profile Attributes through programme activities.
- Educators described some challenges in their programmes. These included perceived tensions between meeting PYP requirements around implementing units of inquiry, and a desire to be responsive to children's emerging or changing interests. One educator also raised the issue of having to meet multiple demands in regard to requirements of the PYP and local curriculum and quality frameworks.
- Educators and parents noted that there was some parental concerns around the capacity of inquiry and play based approaches to develop

children's formal academic skills in literacy and numeracy, skills that some parents felt were necessary in preparation for entry to school. Educators discussed how they informed parents of the rationales for their programme approaches to literacy and numeracy, but also how they responded to these concerns with practical measures in their programmes. By and large, parent interviewees expressed trust in the educators and programmes to adequately prepare their children for school. This issue was of particular concern in Singapore where children are expected to have some basic academic skills on school entry. The researchers argue there is a role for the IBO in supporting their staff in addressing parent concerns around the effectiveness of Early Years programmes in preparing children for successful transition into formal schooling.

- The study found that three of the sites (S1, A1 and A2) demonstrated evidence of strong alignment with relevant national curriculum frameworks in Victoria and Singapore (Victorian Early Years Learning and Development Framework; Nurturing early learners: A curriculum framework for kindergartens in Singapore). Researcher observations and educator interviews indicated that the Early Years programme at S2 was not fully aligned with all aspects of the Singapore framework, particularly in regard to principles of play-based and inquiry-led learning, and appropriate organisation of the learning environment.
- While there were limitations to the research, the mixed-method Mosaic approach did appear to be an effective strategy to study the four Early Years programmes. The different perspectives appeared complimentary to each other in building a coherent 'picture' of the individual programmes and their contexts. The researchers consider that the use of standardized assessment measures alone would have presented a limited picture of processes and outcomes in the four programmes. The qualitative data from the researcher observations and stakeholder interviews provided a more in-depth view of how three of the programmes in particular used inquiry based approaches to support children's progress in the Learner Profile. The interviews also enabled the identification of stakeholders' views of the programmes' achievements and challenges.

1. Introduction and Background

Researchers in the School of Education at Deakin University were contracted by the International Baccalaureate organisation (IBO) to conduct a study into implementation strategies and programme outcomes in *Early Years* programmes in schools running the International Baccalaureate *Primary Years Programme (PYP)*. The PYP is a curriculum framework designed for students 3-12 years. The Early Years component is for children in their preschool years, according to the typical age for starting formal schooling in the country in which the PYP programme is being run.

While there is a growing body of evidence on the processes and outcomes of International Baccalaureate (IB) programmes, the Early Years stage of the Primary Years Programme is a new area of research. Not all schools that offer the Primary Years Programme (PYP) include the Early Years stage. In Australia, while PYP offerings are increasingly being offered in state-run primary schools, Early Years Programmes are run almost exclusively in early learning centres, or as part of PYP programmes within private schools. There is a sense that the best way (or ways) to do Early Years programmes is still an open question. This reflects the wider picture of early childhood education, where new policies and frameworks, and challenges to traditional approaches, are evident in many countries.

Further evidence that educators in Early Years programmes are actually in a creative and reflective process of exploring the possibilities for what Early Years programmes can be, is the fact that many of Early Years Programmes combine the PYP with a Reggio Emilia inspired approach. Teachers in these programmes perceive an alignment between the goals and visions of the PYP and Reggio Emilia (Cancemi, 2011). In addition, it is interesting to speculate whether Early Years teachers see the approaches of the Early Years Stage of the PYP and of Reggio Emilia as enhancing each other, and enabling them to create a rich and appropriate programme for children in the years before school, programmes that are aligned with the later stages of the PYP, but also uniquely 'early childhood' in focus.

This study investigated implementation strategies and outcomes in Early Years Education in the Primary Years Programme of the IB, through a mixed-methods approach using both quantitative and qualitative data. It is based on

intensive case studies of four Early Years Stage programmes within the IB Primary Years Programme, at two sites in Melbourne, Australia and two sites in Singapore (Sharp et al., 2012).

While there are a number of approaches that could have been used for this study, the researchers felt that given the small-scale nature of the evaluation, as well as the complexity and variety of approaches of early childhood settings, that an in-depth case study approach was an effective way to investigate the implementation of the Early Years Stage in a small number of selected sites, across two very different cultural and geographic contexts. The 'Mosaic' approach (Clark, 2010) has been adopted as a way of capturing the varied perspectives of different stakeholders. As well as researcher observations and standardized assessments, this approach involves exploring the views of families, staff, and children on the programmes. According to Clark:

The Mosaic approach is a research framework which aims to play to the strengths of research participants, drawing on expressive languages to facilitate thinking about experience and communicating these ideas with others....This is designed to be an active research process where meanings are constructed from a variety of sources and by different individuals in order to compile a picture or series of pictures. (Clark, 2010, p. 31)

It was considered that the Mosaic approach would be highly suitable as a means of exploring stakeholder and researcher perspectives on their views and experiences of the Early Years programmes (Clark, 2010, 2011).

2. Research Design

The project used mixed methods within a 'Mosaic' approach. This provided data on the four programmes as case studies, and focused on children's learning and development, and educator practice, from a number of different perspectives. The aim was to bring this data together to build up a rich and detailed 'picture' of each site. The diverse perspectives included those of staff, children, families and researchers (see Table 1). The project design also

aligned with a sociocultural perspective that seeks to account for family, community and relationships as significant influences on programme quality, and children's learning and development. The inclusion of programme documentation and self-reflective processes as data sources is also congruent with the Reggio Emilia approach (Rinaldi, 2005), one which is commonly used within the Early Years stage of the PYP (and at the four study sites), and which aligns with IB principles and goals (Cancemi, 2011).

Table 1. Diverse perspectives on the programmes as data sources

Perspective	Focus	Data Source
Researcher Observer	<p>Programme philosophy processes & outcomes</p> <p>Learning Environments: quality (space, aesthetics, resources, natural elements); role in supporting programme processes & outcomes</p>	<p>Observations: field notes, video/audio, photographic, artefacts, etc</p> <p>Interviews/discussions with educators</p>
Formal Assessments	<p>Child outcomes in areas of:</p> <p>Literacy</p> <p>Developmental school readiness</p> <p>Learning skills</p>	<p><i>Early Literacy in English Tools (ELET)</i></p> <p><i>Who am I?: Developmental Assessment</i> (de Lemos & Doig, 1999)</p> <p><i>Learning Skills</i> section of the <i>Social-Emotional Wellbeing survey (SEWS)</i> (ACER, 2013)</p>
Educator	<p>Qualifications, experience, education</p> <p>Pedagogical philosophy & curriculum approaches</p> <p>Programme strategies & processes</p> <p>Children's Outcomes vis-à-vis programme goals</p> <p>The learning environment</p> <p>Relationships with parents</p>	<p>Questionnaire administered to all educators on each site</p> <p>Staff interviews (2 educators per site)</p> <p>Analysis and reflections on their own programme documents</p> <p>Educators reflections on researcher in-class observations of activities & interactions</p>

Coordinator	<p>Social-cultural context</p> <p>Programme philosophy, processes & outcomes</p> <p>Relationships with families</p>	<p>Document analysis</p> <p>Questionnaire administered to all educators on each site</p> <p>Interviews with EY/PYP leader/principal re overall programme philosophy, goals, etc (1 per site)</p>
Child	Perspectives on programme activities & environment, and their own learning	Educator/child discussions with photos, drawings, writing.
Family	<p>Family perspectives on programme, including outcomes for their own children</p> <p>Relationships & engagement in programme</p>	Interviews with family members.

2.1 Recruitment

The initial aim was to recruit two participating schools in Singapore, and three in Australia, in Sydney and Melbourne. The IBO assisted with identifying and the initial contact of potential participant schools. The two Singapore sites were recruited quite quickly, allowing a month to collect data before the school break commencing at the end of June. The Australian sites took longer to confirm, with several schools in Sydney and Melbourne declining to participate. Two schools withdrew at the last minute, making it difficult to recruit replacement sites. In the end, the Australian sites consisted of two schools in Melbourne.

2.2 Data Collection

Data were collected at the two Singapore sites in June. At the two Australian sites, data was collected at two time points: September/October and November/December. Analyses included the following comparisons: within programmes; between sites; and on some measures, in relation to learning and development outcomes in the general child population. The findings were also considered in relation to research findings in the literature, and relevant Australian and Singapore national curriculum and quality frameworks.

The study involved conducting an in-depth investigation of the following aspects of each programme: philosophies and values; contextual influences;

classroom processes; child outcomes; educator, child and family perspectives of curricula and settings; researcher observations of programme settings, curricula and activities (see Table 1). The project's sociocultural and reflective practice approach to evaluation was designed to be in tune with the educational philosophy and values of both the IB and the Reggio Emilia approach used in many IB schools Early Years Stage programmes (Cancemi, 2011). The stated aims of these programmes represent the commencement of experiences and opportunities in the classroom that allow students to become genuine inquirers, and develop empathy, compassion and respect for others in line with the programme standards and practices that are common to all IB programmes. Data collection and analysis also included reference to relevant national and state standards in Australia and Singapore (*A Framework for a Kindergarten Curriculum in Singapore* (Republic of Singapore, 2008), the Australian *Early Years Learning Framework* (Australian Government, 2009), the *Victorian Early Years Learning and Development Framework* (State of Victoria, 2011b), the *National Quality Framework* (Australian Children's Education and Care Authority, 2012).

The project also used several assessment tools that allowed comparison of child outcomes both between programmes, and with larger populations, in the areas of developmental school readiness, literacy and social-emotional development. The '*Who am I Developmental Assessment*' (de Lemos & Doig, 1999) provided data on children's developmental progress, and enabled comparisons between programmes, and in relation to typical age-related expectations for the general child population. The selection of *Early Literacy in English Tools (ELET)*, developed by Victoria's Department of Education and Early Childhood Development (State of Victoria, 2011a), are part of the *Diagnostic Assessment Tools in English*, a suite of validated assessment tools that enable teachers to attain additional information about students' learning strengths and challenges in English (V. Hall, personal communication, May 21, 2013). Children's development of learning skills was assessed through the *Learning Skills* measure that is part of the *Social-Emotional Wellbeing Survey (SEW)*, an on-line tool used by teachers to report on children's development in these areas (ACER, 2013). This tool provided data on children's social and emotional development, particularly in relation to learning, and for comparison to ACER's data set on larger populations.

In this study, the evaluation of outcomes was linked to the following:

- IB goals for the Early Years Stage of the Primary Years Programme, with particular focus on the Learner Profile attributes as they relate to this stage of education
- Specific programme goals of individual sites
- National and state-based Australian and Singapore Frameworks for early years programmes.

The research used six areas of focus, or six 'lenses', for investigating the selected programmes: institutional, environmental, educational, and the perspectives of educators, children and families (Curtis, 2010, 2011). This approach required the use of a range of methods, including child-centred approaches. The methods and data collection approaches were appropriate for the evaluation of outcomes in respect to the ethos and aims of IB programmes. There was an emphasis on the collection and analysis of data that reflects the processes of professional self-reflection and improvement that are an integral part of IB programme evaluation processes. This approach also fits with the Reggio Emilia emphasis on 'learning made visible' through documentation. In Reggio Emilia inspired programmes, the process of documentation is regarded as an essential component of both teaching and learning. The role of the environment is also emphasised, where it is regarded as 'the third teacher'. On the other hand, data was also collected that allowed for comparison of learning and development outcomes with the general child population.

In this project, researchers also observed children's play, both in terms of play outcomes and to enable the investigation of play as a context for children to demonstrate IB PYP Learner Profile attributes. Play episodes provide authentic and natural contexts for observation of children's social interactions and thinking processes (Bergen, 2002; Dockett & Fleer, 1999; Hughes, 2010). When children engage in dramatic or constructive play, they are required to engage in activities that can demonstrate Learner Profile attributes, such as planning, problem solving, co-operation, and use of knowledge (IBO, 2013). Observations of play provided data on the opportunities provided for play within each programme, the type and quality of children's play, and the extent to which children demonstrate the Learner Profile attributes in the play context.

The data on children's play has also been linked to other observations on the quality of interactions, curriculum and the environment within the programme.

Two researchers conducted in-class observations, and collected data in the form of field notes, photographs, audio and video recording, collection of artefacts, and discussions and interviews with educators. The audio and videorecordings were used as a memory prompt for the researchers, and as a basis for educator reflection. They were not coded for analysis. Researcher observations of the learning environment involved both indoor and outdoor spaces, including the role of the outdoors in the each programme, and the extent of access to natural elements available to children. This is in line with growing evidence on the importance of children's access to the outdoors and the natural world for health, learning and wellbeing (Cosco, Moore & Islam, 2010; IBO, 2013; Nedovic & Morrissey, 2013; Trost, Ward & Senso, 2010; Waters & Maynard, 2010; Wells & Evans, 2003). The Australian National Quality framework also now mandates that early childhood programmes must provide opportunities for children to interact with the natural world (ACECQA, 2012). Consideration was also given to the geographical and sociocultural contexts of the sites, and how these influenced and were reflected in the programmes.

3. Participating Sites

The project involved Early Years programmes in Singapore and Australia. These two countries were chosen as presenting opportunities to explore the interplay of diverse cultural and geographic factors within the context of the international IB PYP. In consultation with the IBO, a number of potential participating schools in both countries were identified and contacted. The Early Years programmes in four schools were recruited to participate—two in Singapore and two in Melbourne. Two of the researchers were responsible for the collection of observational data and teacher interviews at the four sites. One of the researchers had extensive experience of the Singapore context, and in addition a local research assistant was recruited to assist with data collection for the Singapore sites. The local knowledge of both greatly assisted with the liaison with the Singapore sites, and in data collection processes such as document collation and interviews.

It needs to be noted that because children in Singapore start school later than in Australia, that the child participants in the Early Years programmes in Singapore, were on average at least half a year older than their counterparts in the Australian programmes. A further difference was that both sites in Singapore involved international pre-schools on their own sites, serving a mix of expatriate and local families, while the Australian sites were both in private schools, co-located with primary and secondary levels, and serving a predominantly local population.

3.1 Introduction to the Sites

Based on researcher observations and narratives, audio, video and photographic data, staff questionnaires, and staff and principal/lead teacher interviews, the following introductory descriptions and observations are provided of the four sites.

3.1.1 Singapore Site 1 (S1)

S1 is situated in a lovely old building in large attractive grounds. The building is clean and bright, while still maintaining the original features. It is part of a larger organisation that runs several other international preschools and schools. The Coordinator and the two participating teachers hold UK or Australian qualifications, and many of the children are from expatriate families. The K1 class undertakes four of the IB PYP units, and the K2 class does all 6 units. The programme is strongly inspired by the Reggio Emilia approach.

The Learning Environment

Indoors

In the central areas there is a library on the Ground Floor, and an *atelier* on the first floor. Ateliers are a feature of the Reggio Emilia approach, being seen as studios or workshops where children work on documented projects that represent their learning and thinking (Vecchi, 2010). Both these areas are carefully decorated with aesthetically attractive objects and materials, as befits the Reggio Emilia approach (Edwards, Gandini & Forman, 1998). The older children in K2 are able to access the Library independently. In the atelier, there is an extensive range of carefully organised art materials and resources, where children work on long-term projects.

On the first floor near the stairs there is a 'Reggio inspired' (Coordinator's words) collection of recycled materials on shelves. On the stair landing there is a display of paper mache self-portraits made by the children, as part of a project exploring paper mache as a technique. At the bottom of the stairs, there is a 'light exploration' area.

Outdoors

The grounds comprise a large expanse of well-kept lawns, with trees and bushes dotted around. Outdoors, staff have responsibility for different areas and activities. The outside playground for the younger children is at the side, separated by a gate. It consists of an expanse of lawn, with bushes round the side, and a gazebo that contains bikes, balls, and other equipment. This gazebo used to function as an outdoor atelier, but new regulations meant that the preschool could not have a roofed structure in this area, and so it became a storage area.

The larger outdoor play area contains a large roofed sandpit, and swings, as well as a 'mud kitchen', where children can work with mud on rainy days. There is also a well-maintained vegetable and fruit garden, with a scarecrow.

K2 Programme

The K2 programme involves children working across two rooms, with 4-5 staff, including two teachers, a Chinese language teacher, and an aide for a child with additional needs. There had originally been two separate groups, but numbers had dropped so the two groups were combined into one, and the staff now collaborate together in working with the combined group.

Children begin the mornings with half an hour of reading to each other. This half-hour of reading was in response to parental and other concerns that children moving on to local schools would have sufficient literacy skills to meet the expectations of the Singapore school system. Children then spend much of the rest of the morning working in small allocated groups on projects. If they have finished project tasks they are free to move to other activities. Twice each morning when the researchers were there, the class would come together as a whole group, to either plan what the children were going to do, or to discuss and evaluate what they had done.

On the two days of the researcher's visit, children were working on preparing for their graduation celebrations and were divided into work groups with responsibilities such as invitations, posters, organizing table settings, and decorating the space where the celebration would take place. For much of the time, each group had an adult with them supporting them in their work. There were also other projects running concurrently, based on children's interests. In the rooms where the researcher was observing, the focus of these other projects were around living in extremes of cold and hot and dry, and the specific topics included the Arctic (with a special interest on animals living there), and deserts. There was also a group working on camping in cold and hot climates.

From the researcher's perspective, the project work appeared as aligned with the Reggio Emilia approach and PYP, in that teachers took on the role of co-learners, and allowed the children to take control of the long term projects. When questions or issues arose, teachers did not provide solutions, but would pose questions and encourage children to come up with their own solutions, demonstrating PYP attributes of problem-solving, cooperation and use of knowledge. A number of examples were observed of children working out the spelling of unfamiliar words, and other examples of problem solving. A long length of canvas cloth was stretched across the floor in one of the rooms. This was divided into sections for individual children to work on with various art and craft materials, as part of a long term project. Teachers would sit near the cloth, and offer assistance with materials if needed. Several children were observed working in a concentrated and collaborative manner on different areas of the cloth over the two days.

3.1.2 Singapore Site 2 (S2)

S2 is situated in a bright and attractive new building, with windows offering views of greenery. The preschool is located in a pleasant and well-off suburb, with low-rise housing. There is a Library, and a large room for gatherings or meetings. There is also a large space in the entry area, with some blocks and construction equipment, toy trucks and a 'Home corner' area. The researchers did not observe this space being used by children over the period they were there.

Staff at the preschool, including teachers and coordinators, were locals, and the teachers had obtained their qualifications in Singapore. Children were from mainly local families, but with some expatriate families. The school website states that the programme is also inspired by the Reggio Emilia approach.

The Learning Environment

Indoors

The K2 room, like all the rooms, is bright and airy. There is a tiered bench area where children often sit for 'lessons' such as maths and Mandarin. There are some tables, shelving, a book area, and shelves containing constructive play materials and puzzles (based on Disney characters). The walls and shelves contained displays of children's work. Teachers have also displayed posters and other materials, based on literacy, maths and Mandarin curriculum content. Down some steps in the open corridor, a pretend 'shop' has been set up for dramatic play, with 'merchandise' displayed (empty boxes and containers), and a 'cash register'.

Outdoors

Outside, the K2 class accesses the flat central lawn area, neatly edged by plantings, and a paved area. The class has to go down a flight of stairs to access outside. There are a large number of tricycles available for the children to ride, and other equipment promoting gross motor activity, such as balls, hoops, skipping ropes, skittles, etc. Most of these are stored in a cupboard, and children can select at will from the cupboard while they are outside. Other outdoor areas of the preschool, with fixed musical and climbing equipment, appeared to be for the younger children.

K2 Programme

The K2 group includes 17 Children, and three staff, including a Mandarin teacher.

The programme includes project work, and there was a wall display from a recent project based on the theme of 'How we express ourselves', and 'story bags' and 'quilts' that children had made as part of this project, using a selected range of materials such as felt pieces and plastic eyes to put on faces, etc. There was also a portfolio documenting a project on 'Sharing the

Planet' and 'Sustainable Products'. These projects involved excursions and visitors to the preschool, such as a well-known children's book illustrator. At the time of the researcher's visit, the K2 class was between projects, and were doing 'revision' for several weeks.

The programme in K2 class, as observed by the researchers, was quite structured, with a strong emphasis on literacy, numeracy and Mandarin teaching. There were formal 'lessons' with children sitting on the tiered benches for extended periods, while the teacher sat at the front. On the first day of the researcher's visit, the morning programme was as follows:

9.00-10.30	Working on the ' <i>Who am I</i> ' booklet (part of the research project)
10.30-11.00	Outdoor time
11.00-12.00	Mandarin
12.00-1.00	Maths (Big Group)
1.00	Lunch

The timetable for the morning of the second day was as follows:

9.00-10.00	Mandarin
10.00-11.00	Free play (in response to researcher's request)
11.00-11.30	Phonics
11.30-1.00	Special farewell to a boy who was leaving, and some outdoor play

Overall, the programme at S2 appeared to the researchers as structured and teacher-directed, similar to a classroom in the early years of school. Children experienced instruction, and were then assigned tasks to complete. They appeared to complete these tasks successfully in the main, although there were some exceptions who appeared to struggle with completing tasks 'on time'. The teachers assisted the children in these tasks where necessary.

3.1.3 Australian Site 1 (A1)

A1 is a co-educational Early Learning Centre (ELC) within a private girls school. It is situated in a bright and attractive seven-year old building, next to the Junior School. The location is a pleasant and well-off suburb, with renovated 'period' housing and tree-lined streets. The teacher told me that the staff were able to have a say in the design of the building. Talking to the architects, they expressed a desire for features found in Reggio Emilia centres in Italy, including 'transparency' between rooms and across the building, and a large 'piazza' space with the individual rooms opening off it. There were also the characteristic Reggio 'ateliers', specialist art spaces located and shared between two rooms. Staff are Australian, with Australian qualifications. The children come from affluent, middle-class families, with some diversity of cultural background. The participating class were the 'Platypus' group of 4-5-year-olds in their year before school.

Programme Philosophy

As well as being a PYP Early Years programme, the teachers are very much inspired by the Reggio Emilia approach. The leading teacher talked of how she felt that the staff were able to integrate the two approaches, as well as addressing the *Victorian Early Years Learning and Development Framework (VEYLDF)*. The environment strongly reflected Reggio features in the activities and approaches of the programme, the displays around the centre, and of course the architectural design of the centre.

The Learning Environment

Indoors

The Platypus classroom, like all the rooms in the ELC, is bright and airy. It is entered through the Piazza. On one side, a bank of windows looks out on a long narrow gravel courtyard, lined with trees. At the time of the visit, these trees were in blossom, and a table with art materials and blossom in a vase, had been set up facing one of the windows. Other activities included a general high work table, clay, art easels, construction materials (although no set of unit blocks), story telling corner (with the *Gruffalo* book and dress ups linked to the story), a book area, and an area dedicated to 'letter writing to fairies'. As well

as low child-sized chairs and tables, there is an adult-sized couch, two high tables/benches, and adult-sized stools and chairs.

Outdoors

There are two outdoor areas used by the ELC. One is at the back of the block. This is a newly developed area, covered in loose bark material with a range of features including a cubby house, a rock climbing wall, sandpit, and a wooden deck area. There are plantings of trees and bushes, and some plants in pots, but all the plantings are quite small as they have only recently been planted by students in another group. The group accesses this area by going out through the Piazza and down a path. The teacher noted that she likes to take the group out first thing, when there is more chance of them being able to use the space on their own.

There is a second outdoor area, just outside a door of the Bilby room, facing the road. This space is also accessible from a door in another room, and so is shared. It is called the 'tranquillity garden' and has plentiful vegetation with a tunnel of plants, winding paths, and nooks and crannies. There is a chicken pen (and children save scraps for them), and a vegetable garden. There is also a set of wooden unit blocks under cover just outside the other room. Researchers were informed that the Platypus group uses this area at particular times during the week.

Programme

The day often starts outside for half-an-hour or so. Children then come in for at least two hours, working on self-selected activities. During the morning there are several whole group discussions on the mat, looking at the day ahead, or reviewing what has happened. Children take responsibility for putting out their own bedding for rest time after lunch. What happens after lunch is flexible, and sometimes there is a specialist session such as music, or children may go outside. On some days, there will be an 'inside/outside programme, with children having access to the 'tranquillity garden' accessible from their room (teacher communication).

In the first data collection visit to A1, researchers observed that children engaged in self-selected projects and activities. On a number of occasions, the teachers were observed asking for children's input on planning the

programme. For example, in one group discussion, one of the teachers told the children that they could work out for themselves how many should be in the story corner at any one time, and how they would take turns. The teacher also asked the group: “Are we still interested in writing letters to the fairies?” (one child indicated they were) the teacher then asked the group: “Shall we leave it out a bit longer?”.

In short conversations with the teachers through the day, such as when the researchers asked for clarification of something that was happening, teachers often talked of teaching and learning goals for the children (group and individual). An excerpt from a researcher’s observation follows:

The teacher talked with the group about investigating dinosaurs: “We need to have lots of experts on dinosaurs. First we need to find out what we know about dinosaurs”. Teacher then asks “Is there anywhere I can find a live dinosaur?” After some discussion, the group eventually concluded that you couldn’t—“Only fossils” said one girl. To break up the group, the teacher asked each child where they were going to work. Later the teacher talked to the researchers about the children’s interest in dinosaurs. She noted that the children had ‘done’ dinosaurs in the 3-year-old group, but she wanted to see what they knew, so that she could “take them to a higher level” with the topic.

3.1.4 Australian Site 2 (A2)

A2 is a church run, lower fee co-educational school in a middle to outer area of suburban Melbourne. It is located in 100 acres of bush surrounds that include a lake. The Early Learning Centre at the school caters for children from 3-5 years of age in two rooms, offering full-time and part-time placements in extended day programmes. The participating group were a class of 4-5 –year-olds in the year before school. Families are predominantly of middle-class background from surrounding suburbs. Staff were Australian with Australian qualifications.

Programme Philosophy

As with A1, the Early Learning Centre at A2 states that as well as being a PYP Early Years programme, the teachers also follow the Reggio Emilia approach. The school's ELC Handbook also states that the programme is aligned with the Victorian Early Years Learning and Development Framework (VEYLDF) and the National Quality Framework (NQF).

The Learning Environment

Indoors

The ELC was located in two large, bright rooms, plus a large multi-purpose space where specialist classes such as movement were held, and which also held displays of children's work. There were also a staff room, kitchen and offices. An extensive covered verandah ran along one side of all the rooms. Windows looked out on the outdoor space on one side, and on bush and open countryside on the other.

The ELC4 room contained a number of tables where children were engaging in various projects. There was a 'stage' area, enclosed by sheer curtains, with a platform and seating. There was also an unusual indoor cubby house with two levels, constructed of branches and sticks that children helped to build. Other areas included easels and tables for art, a book area, a 'tinkering' area, and a block area. There were extensive displays of children's past and current work.

Outdoors

The two rooms shared a large outdoor area accessed via the verandah. This outdoor area included plantings of trees, bushes, grasses, rocks and flowers. There were also beds and pots of edible plants such as vegetables and herbs that the children helped to look after. Other features outdoors included: swings; climbing frames; large tyres; a cubby house; a set of outdoor blocks and other construction materials; a carpentry bench; a large sandpit with adjacent water tank; a compost bin; a frog bog; and paths that wound between bushes. Children spent extensive blocks of time outdoors, and outdoor activities were integrated into the programme.

As well as the ELC outdoor area, the staff and children also accessed the larger 100 acre bush space surrounding the school buildings. Weekly

excursions into the bush were a regular part of the programme, happening in all weathers (except when unsafe). Family members regularly participated in these excursions

4. Researcher Observations: Analyses and Comparisons of Programmes

The following analysis and comparisons of the participating programmes are based on data collected by one of the researchers during visits to the four sites, with assistance from another research team member and a Singapore based research assistant. The researcher has many years of professional experience as an early childhood teacher, and as an academic in early childhood teacher pre-service preparation programmes. This means that she is highly familiar with early childhood curricula and programmes, and how they work. Her own educational philosophy and values reflect her background and experience as an Australian early childhood teacher, with an emphasis on the value of play-based learning, natural outdoor learning spaces, and the promotion of children's dispositions for learning through inquiry-based learning, and curricula based on children's interests. These values align with the stated principles of the IB PYP Early Years Programme (IBO, 2013). It needs to be acknowledged, however, that the researcher's background may have led to unintended subjective bias in the selection and interpretation of data gathered in the Singapore context, and in particular from one of the participating sites where there appeared to be more of an emphasis on formal academic learning, reflective of the dynamics of the history of the programme and a different sociocultural context.

In Singapore, the researcher, the other team member, and the research assistant spent time over two days at each of the two sites. In Australia, the researchers were able to spend four days at each site, in September/October and November/December. While at each site, they made field notes, took photographs, and made audio and video recordings. The researchers also looked at programme documentation and conversed with staff as a way of clarifying what was being observed, or by way of gaining further information (Rinaldi, 2005). After discussion and consultation with fellow research team members, the data was organised and analysed according to three main themes: programme approaches, philosophies and goals; learning

environments; and play and play-based curriculum (including play outcomes). Through descriptions, narratives and visual data, the researcher aimed to describe and give evidence of programme processes and outcomes in relation to PYP principles and goals, and in relation to programme specific goals.

The Mosaic approach and associated visual research methods, represent multiple perspectives or different ways of 'seeing'. 'Seeing' in this context involves more than mechanical apprehension, but is part of an approach that acknowledges that 'interpretation is part of the process' (Clarke, 2010, p. 6). The data analysis in this section represents the researcher's 'seeing', her interpretation and perspectives on what she observed. Clarke (2010) describes how the researcher perspective is included in the Mosaic approach, and how they can be 'acknowledged as a meaning maker within the research process rather than an invisible pair of hands or eyes' (2010, p. 28).

It was decided to use photographs in the writing up of the findings in this section, as a way of supporting and illustrating the researcher's descriptions and interpretations. This also provides the reader with their own opportunity to 'see' what is being described and interpreted, albeit through photographs that represent both decisions about what was to be captured through the iPad camera, as well as what has been selected to be used from the photographs that were available to be used (Berger, 1972). The selection of photographs was also circumscribed by concerns to maintain the confidentiality of both children and schools.

4.1 Programme Approaches, Philosophy and Goals

4.1.1 IB PYP Early Years Programme

In conversations with researchers, staff at all four sites described their programmes as firmly based in, and meeting the requirements of, the philosophy and approaches of the Early Years stage of the Primary Years Programme. This appeared supported by the programme documentation that was seen by the researchers, and the evidence of projects and units of inquiry observed in the learning spaces at the sites. A1 for example, had a display on the wall of six posters for six Learner Profile Attributes (risk taker, caring, inquirers, open-minded, thinkers, communicators). Children were encouraged to place a star sticker on the relevant poster if they feel that they had

demonstrated one of the attributes. There were a number of stickers on the ‘communicator’ poster, possibly because this was an attribute that was being emphasised in project work at the time.

A1 also had posters and project books in the common piazza area displaying information on the units of enquiry that the different groups had been working on. For example, the participating preschool group had a display about their unit of enquiry on ‘patterns’, explaining the ‘lines of enquiry’, photographs of children working on the unit, and examples of children’s work. S2 had displays on lines of enquiry based on the transdisciplinary theme of “how we express ourselves”. This included photographs and children’s art work related to an excursion that the group had been on, and their work with a local artist. At the time of the researcher observations, A1 and S2 had the displays that most explicitly outlined programme activities and children’s work in relation to the PYP terms and structures (units and lines of enquiry, transdisciplinary themes, learner profile attributes, etc) (see Photo 1). S1 and A2 however, also showed extensive displays of children’s projects and units of inquiry, and explicitly linked these to learner profile attributes and transdisciplinary themes.

Photo 1. PYP display at S2



4.1.2 Inquiry-based and conceptually driven curriculum

The taught curriculum of the IB PYP is described as ‘inquiry-based and conceptually driven’ (<http://www.ibo.org/pyp/taught/>). Researchers observed strong evidence of this pedagogical approach in the programmes of S1, A1 and A2, but less so in S2. At the S1, A1 and A2 sites, the daily routines included whole group, small group and individual discussions where concepts and issues were explored, and questions and provocations posed for the children to think about and explore more deeply. These discussions were linked to projects and units of inquiry that children were working on, had worked on, or were about to start working on. Following are some examples of inquiry-based and conceptually driven pedagogy observed at the sites.

Example: S1

Observation Day 1: Invitation Committee (1)

This group (5 boys) had been working over a number of days on designing and producing the invitations for the Graduation Ceremony. In doing this, a number of questions and challenges would arise for the group. On the first day that the researcher was there, the group was grappling with questions of what information was needed, and how that information would be presented.

The teacher posed questions, such as ‘What information do people need to have?’. The group worked out that invitation recipients would need information about place, time, date, etc. At that time, each boy appeared to be writing up their own version of the invitation. Questions about the spelling of words would arise, and teachers would assist the children to work out the correct spelling by sounding out the words. One boy was observed sounding out the word ‘library’ to himself, writing ‘librerly’.

Observation Day 2: Invitation Committee (2)

Work on the invitations continued the second day that the researcher was at the preschool. Three boys sat at a high table on stools with their teacher. The question arose about whether the invitations should be formatted vertically or horizontally, and a vote was taken by the three boys and the teacher. They were deadlocked on the issue (2 votes to 2), and the researcher was invited to provide the deciding vote. However, members of the group were not happy

with this, and decided to take children's votes only, which came out 2 to 1 for vertical formatting. But, the group was still not happy, and decided to 'ask everyone'. After discussion between themselves about how they could record the votes, they created a sheet on a clipboard, divided in two columns (one for vertical and one for horizontal formatting). They then went round asking children which format they preferred, and asking people to write their names down in the appropriate column.

The teacher commented that it was interesting that the processes of deciding this question about the formatting had become more important than the invitation itself. He further commented that he thought this could become the focus of an inquiry, as the children had been concerned recently with issues of fairness and equity. The teacher also commented that there had not so far been a lot of 'primary sources' for the current project on 'Our World'.

Example: A1

The K4 group were doing a unit of inquiry on *How the world works*, focused on the key concepts of *Form* and *Reflection*. The central idea was 'The properties of patterns help us to interpret the world'. The *lines of inquiry* were: the properties of a pattern; where we find patterns; ways to make patterns.

As part of this unit of inquiry, children were asked to go and look for patterns in the natural and built environments. In their documentation, the educators noted that "*Following on from our conversation yesterday about patterns, the children came to school bursting with ideas about where they had seen a pattern and where else you might find a pattern.*"

As part of the unit, children also created their own patterns. As well as documentation and displays of the patterns that children had created in various media, a triangular space had been created in the room, bounded on two sides by mirrors for children to create kaleidoscopes (see Photos 2 & 3) .

Photo 2. The kaleidoscope created in the mirrored space at A1



Photo 3. Children working on creating a kaleidoscope at A1



The researcher made the following notes:

Children are making kaleidoscope patterns. Teachers decided rather than making individual kaleidoscopes (too structured), they would make a big one with mirrors. Current pattern (see photo) is a work in progress, over a week or more. Note there is a sign up alerting other children that it is a work in progress, and the teacher says other children have respected that.

Example: A2

Some of the group were working on a long term project making nests. At one point in the morning, they gathered for a group meeting and the researcher noted the following discussion:

Children had made a 'nest' of chairs—*"made it round"*.

The teacher (T) asked *"Are nests always round?"*.

Child commented that one child was the mother bird and others were babies—*"We had to crack out of our eggs"*.

T. *"How would you do that?"*

The children talked of using beaks.

T. *"What other creatures come out of eggs?"*

Children identified turtles, sea dragons.

T. *"If birds use beaks to come out of eggs, how do sea dragons crack out of eggs?"* The children suggested they could use claws, scales, their heads.

T. *I see some of you have ideas. How could we find out?"*

Children's responses include: *"On the internet"*, *"We could research how do sea dragons hatch from their eggs"*.

T. looks up on iPad, typing in search terms, asked children what would be the first letter of 'sea dragons'. Some children said 'c'.

T. *“What else makes that sound—how about the sound in Siena?”*

Children then responded “s”. T. noted that children had noted that sea dragons are also called sea monkeys. Children were excited to see a photo of ‘leafy sea dragons’ on the iPad.

T. reading from iPad: *“...called leafy because their appendages—their legs and things—look like leaves”*

One child mentioned sea horses.

T. *“Are sea horses the same as sea dragons?”*

T. *“Why are they called sea dragons? Is it because they look like dragons? Do you think they look like dragons?”*

After some further discussion the group broke up with a teacher working with four children, continuing to look at information on the iPad. The children then moved on to drawing sea monkeys based on pictures on the iPad.

Example: S2

As noted above, the researchers observed less evidence of inquiry-based and concept driven pedagogy in the S2 programme. The programme was run according to a timetable based on curriculum areas such as ‘Maths’ and ‘Chinese’. Researchers were also informed that at the time they were observing the programme, it was a ‘revision’ week. At the time, researchers did not observe evidence of current units of inquiry, nor did they see the sort of inquiry-based group discussions or child-led activity that they observed in the other three programmes. Following is an example of a researcher’s notes of a ‘lesson’ type session observed at S2, involving the whole class. While the children showed good concentration during the hour-long session, and exhibited examples of cooperation amongst themselves, the activity was teacher-directed and focused on right and wrong answers. The children appeared as focused but passive most of the time.

Maths Lesson at S2

The focus of the lesson was on revision of telling the time. The lesson was conducted in the tiered bench area, and children stayed seated

there throughout. After preliminary revision on 'minutes past' and 'minutes before', the teacher held a large clock, and moved the hands to various times and asked the group to say what time it was (6.00; 6.30; 6.45; etc.). The teacher then asked them to go into groups of three, and gave each group a clock. The teacher then said various times, and each child in each group had a turn at turning the hands to the time said by the teacher. The other children in the group were asked to check if it was the right time, and to help each other get it right. Bonus points were to be awarded for children who helped each other. At the end of the lesson, the teacher set a problem: "If I go to the market and buy peaches for \$4.60, and bananas for \$5.00, how much money have I spent?". Some of the children answered correctly \$9.60.

4.1.3 Inquiry-based learning and the importance of relationships

Inquiry based and conceptually-driven learning aligns with the focus on relationships in the Early Years, as enunciated in the *Early Years Resource* published by IBO (2013). The relationships focus derives from the sociocultural co-constructivist approach that accounts for family, community and cultural contexts, and acknowledges the important role of relationships in children's learning. This leads to an emphasis on collaborative learning between children and educators, based on children's interests and the use of teaching strategies such as *sustained shared thinking*. Sustained shared thinking is defined as:

an episode in which two or more individuals 'work together' in an intellectual way to solve a problem, clarify a concept, evaluate activities, extend a narrative etc. Both parties must contribute to the thinking and it must develop and extend.
(Siraj-Blatchford et al., 2002)

Researchers observed an example of children working together to complete a task during a Mandarin lesson at S2:

Mandarin Lesson S2

This was conducted in the tiered bench area, and had a focus on creating sentences. The Mandarin teacher had some children at the front, and stuck paper with Chinese characters on their backs. The other children then had to

organize the children at the front, so that the characters on their backs made sentences. It was presented as a game, and children were laughing. The lesson finished with children writing out sentences in Mandarin, on a sheet with Chinese characters to be copied.

Researchers observed many examples of collaborative learning based on children's interests, sustained shared thinking, children cooperating and helping each other in their learning, and projects and units of inquiry that acknowledged families and communities, and actively involved family members. This was particularly the case with S1, A1 and A2. For example, at the time of researcher observations, children at S1 were planning for their families to attend their Graduation ceremony, and having to think about organising chairs, food, invitations, etc. The teachers encouraged them to take the perspective of the invitees in designing the invitations (*"What information do people need to have?"*). At A1, a Father's Night had just been held, where the children made puppets with their fathers, which were displayed in the room along with photographs. At A2, family members, including grandparents, went along on the regular 'bush walks'. This family involvement brought educational benefits as parents came to understand and appreciate the benefits of children's experiences in the bush.

There were also examples of raising children's awareness of their place in the wider community. Researchers noted the following discussion at a group meeting at A1:

Children brought in presents to go under the Kmart Christmas Tree (for disadvantaged children). One child had brought in a writing set. The teacher asked children to think about what age child would like the writing set. Another had brought in two books. The teacher asked the group if they thought the books were for boys or girls or both, and whether they should be wrapped together. She then asked them what age they thought the books were for. One boy said 'Five'. The teacher responded: "How old are you?". The child answered "Five". The teacher then said: "Look at the words in this book. Could you read these words?" The children said no and as a group decided that the books would be for older children, 8-9 yrs old.

At S2, documentation and photographs from an earlier unit of inquiry, showed the group had travelled out into the city, and had also invited a children's book illustrator into the school, to talk to the children (see Photo 1 above).

The researchers observed many examples of children being encouraged and expected to think of others, to be helpful, to show kindness and care, and to contribute and take responsibility for tasks within the programme. At A2, children took on the roles of 'water monitors', 'light monitors', 'worm monitors' and 'compost monitors'. At A1, children were expected to correctly dispose of their rubbish in three different rubbish buckets: one for rubbish, one for the worms, and one for the chickens. The children at A1 were also responsible for getting out and putting away their own beds.

Children would offer to help each other, work cooperatively towards a common goal, and display care for each other. Researchers observed the following at A2:

Drawing Table

Several children were at the drawing table with the teacher. The children were drawing pictures of flowers and writing messages for their classmate Tom who was in hospital. One child found Tom's name labels and said he would glue one on his picture. The teacher transcribed the children's messages, including these two:

"Dear Tom, I hope you get better. I love you. Love James"

"Dear Tom, Are you feeling better?"

4.1.4 The PYP and Reggio Emilia

Staff at all four of the sites stated that they saw their programmes as aligned with the principles of the Reggio Emilia approach. The reflective, inquiry based approach to teaching and learning that is the basis of the PYP programme is also in line with the Reggio Emilia approach. Researchers observed numerous examples of such approaches in the written, taught and assessed curriculum in the programmes of S1, A1 and A2. The extensive documentation as part of the planning, implementation and evaluation processes of these three programmes, and the view of the child as an active learner, with respect for

children's thinking and ideas, could also be seen as reflective of the Reggio Emilia approach within these three programmes.

The S1 and A1 programmes appeared particularly strongly influenced by Reggio Emilia, especially apparent in the design and/or layout of their buildings, and in their emphasis on expression through the arts, and a sense of aesthetics and beauty in their programmes. Photographs of these sites show, for example: carefully arranged displays of children's papier mache heads, with a quote from Malaguzzi about the 100 languages of children (S1) (Photos 4 & 5); a Library decorated with beautiful objects (S1) (Photo 6); a display of branches of blossom as an inspiration at an art table that mirrors the blossom trees in a courtyard outside; (Photo 7); carefully arranged displays of children's artwork in a piazza area (A1) (Photo 8).

Photo 4. Paper mache masks made by children at S1



Photo 5. Comments displayed on wall next to paper mache masks at S1

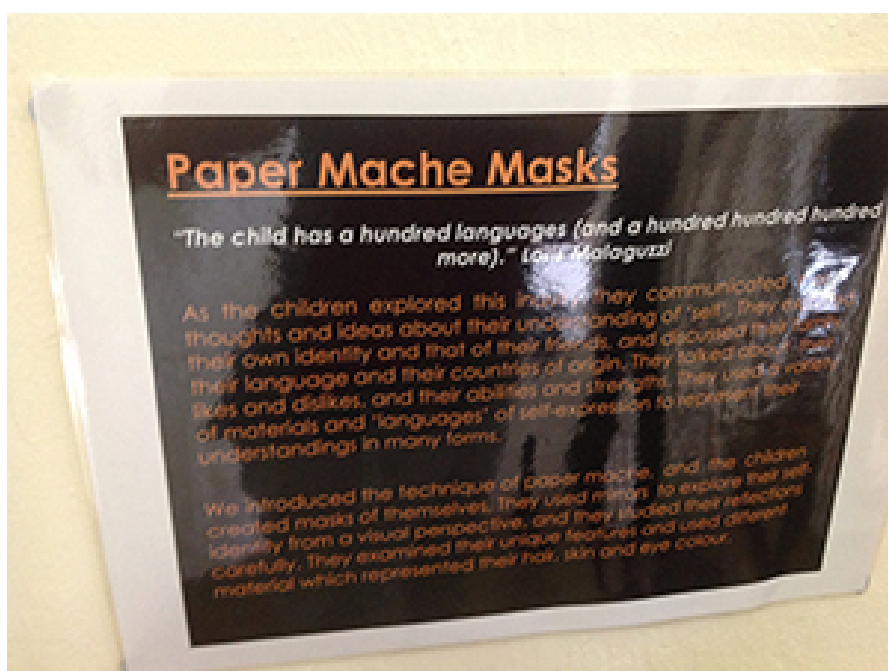


Photo 6. The Library at S1



Photo 7. Blossom as inspiration at A1



Photo 8. Display of children's artwork in the piazza at A1



While staff at S2 also stated that their programme was influenced by the Reggio Emilia approach, researchers did not observe explicit evidence of this, as they did at the other sites. While there was evidence of children's artwork (mostly drawings), expression through the arts did not appear to have a major role in the everyday programme of S2. For example, unlike the other sites, there was not a range of artistic materials readily accessible to children, apart from basic drawing materials. As part of a line of enquiry 'exploring art forms', children had been offered the choice of making 'quilts' or 'treasure bags'. However, the treasure bags appeared to have been decorated using pre-cut and stereotyped materials, such as felt shapes and plastic eyes (see Photo 9). While attractive, they contrasted with the child-directed, often long-term and individual or group-based arts projects observed in S1, A1 and A2. For example, in S1, a length of material was spread out on the floor, with paints, glue, and a variety of materials. This material was laid out each day of the week that the researchers were observing, and was regarded as a long term project to be carried on over several weeks. Children could choose to work on the material, and while educators sat with children and discussed with them what they were doing, ensuring that needed materials were available, all art activity was child-directed.

Photo 9. Treasure Bags' made by children at S2



4.2 Learning Environments

The learning environment, both indoors and outdoors, is regarded as a crucial factor in children's learning, both in the PYP Early Years curriculum (IBO, 2013) and in the Reggio Emilia approach (Millikan, 2003). The learning environment refers not just to the physical space and resources, but also less tangible elements such as the social and emotional climate (Curtis & Carter, 2003). The learning environment can be regarded as reflecting a programme's philosophy, values and pedagogical approaches.

Observation of a learning environment can reveal for example how much children are given choice and responsibility in the set up of a space, or the choice of resources or equipment. It can reveal whether the outdoors and the natural world are regarded as places where learning occurs. A learning environment will reflect whether, for example, sustainability or a sense of aesthetics and beauty, or play-based learning are valued in the programme.

The researchers sought to describe the learning environments of the four sites, and analyse how they reflected and supported the programmes' philosophies, goals and pedagogical approaches. In this section, we describe how the researchers understood the learning environments of the four programmes as reflecting the programmes' philosophies, goals and values in relation to three areas: the role of the visual arts; evidence of child choice and 'ownership' of the learning environment; and the value placed on the outdoors and the natural world as environments for learning.

4.2.1 The place of the visual arts

The researcher observations of S1, A1 and A2 indicated that children's learning and expression through the arts, particularly the visual arts, was an important part of all three programmes. Both S1 and A1 had separate atelier areas, an abundance of art materials available to children, and carefully arranged displays of children's artwork.

There was also evidence that educators worked to foster a sense of aesthetics and artistic sensibility in these programmes. At S1, the K1 group were observed working over several days on a colour wheel, working with the specialist art teacher to mix their own paints to exactly match the shades and tones on the wheel (see Photo 10). At A1, windows down the side of the room

looked out on to an attractive courtyard with blossom trees in flower. The teachers encouraged the children to use the blossom outside, and displayed in vases, as inspiration for their art work. (see Photo 7 above)

Photo 10. Colour Wheel at S1



At both A1 and A2, there were numerous displays of artistic creations related to units of inquiry, accompanied by children's and educators' commentary. Many of these were 3D models in materials such as clay, wire, sticks, fabric, tiles, etc that expressed children's thinking about the concepts they were exploring (see Photo 11).

At S2, however, apart from displays of children's drawings and documentation related to the visit of the children's book illustrator as part of a unit of inquiry, and the display of quilts and treasure bags, observations of the learning environment suggested that, unlike the other sites, the arts did not play a substantial and integral role in that programme.

Photo 11. 'Nests' created by children at A2



4.2.2 Child choice and ownership

The observations of the learning environments at S1, A1 and A2, showed they were organised to give children choices, and a 'sense of ownership' of the environment, aligning with the goals and values of the PYP Early Years Programme (IBO, 2013). Children at all three sites exercised choice and decision-making through the units of inquiry, projects and play activities. At S1, the older children were able to move freely within the building, including on different floors, independently accessing the Library, for example, as part of working to prepare for their Graduation ceremony. At S1, A1 and A2, the researchers frequently observed the children deciding with their teachers on what materials, resources, or activities, would be available for the day. At these three sites, children were expected to make decisions and take responsibility for the learning environment, including outdoors. For example, at A2 children collaborated with a teacher to build new frames for climbing beans, and took responsibility for watering plants. They also had free access to a water tank in the sandpit, and were trusted to decide for themselves when to run the tap into the sandpit, being aware that the supply was limited.

Children at S2 did not appear to have the same opportunities for choice and decision-making as at the other three sites. On the days of the researcher observations, the teachers had a pre-planned timetable of activities that children were expected to complete. Once children completed these tasks, they were able to choose to engage with activities or materials that were

available in the room, such as books, puzzles, drawing, etc. A teacher did describe, however, how the children had been involved in a project where they had decided on improvements that they wanted to see made to a stairwell area, and were involved in implementing those. She pointed out to the researchers where fluorescent strips had been added to the stairs on children's suggestion, as well as decoration of the stairwell.

4.2.3 Outdoors and the natural world

All four school sites had attractive outdoor spaces, and three of the programmes (S1, A1 and A2) made extensive use of their outdoor space through their planned teaching, as well as for children's self-directed and free play and exploration. At S1, the programme included regular blocks of time outdoors, and children were free to utilise the large, expansive outdoor space. On the two days of observation, the researchers saw children engaging in self-directed play including: physical play such as running and swinging; constructive play in the sandpit; and dramatic play in various places. One group of girls had been involved in a project indoors on 'Camping', part of an inquiry into extremes of climate. Outside, they started to integrate this project into their dramatic play:

On the first day of the researcher's observations, several girls from the Camping Project Group, began to create a campsite outside, making a pretend fireplace from a tyre, leaves, sticks etc. A teacher asked 'What could we use as a tent?'. One child remembered a small tent stored in the gazebo in the other playground, and this was brought out. The girls then created 'food' out of leaves and sticks, for cooking on the 'campfire'. One said 'I need salt', and picked up some sand and sprinkled it over the pretend food.

The coordinator also showed researchers a structure in the vegetable garden that children had created as part of a unit of inquiry (see Photo 12):

There is a well-maintained vegetable and fruit garden, with a scarecrow. This garden was linked to a project on "Sharing the Planet", focused on where food comes from. Children were concerned about 'making a difference' and the concept that 'my actions cause environmental change'. They started in their classroom then moved out to the garden.

They made paper, created the garden, investigated the sustainable collection of water, and worked on raising awareness. For example they used rain gauges to measure and track water usage. As part of raising awareness, they created a frame in the garden with buckets with holes in them and rain gauges. This structure was used to demonstrate to parents how the children had used rain gauges to assist the sustainable use of water in the garden (see photo). The children themselves thought of using the bucket with holes as a way of demonstrating what they did for their parents.

Photo 12. The vegetable garden at S1



A1 children had access to two outside areas. One was a well-resourced but fairly standard pre-school playground. A second outdoor area, accessed directly from two of the rooms, contained trees and bushes, and a focus on sustainability with vegetable gardens, compost bins, and a chicken coop (see Photo 13). This area was called the 'Tranquillity Garden'. Children take responsibility for managing the collection of scraps for the compost and to feed the chickens. Both teacher comments and programme documentation indicated that the outdoors and the natural world were regarded as important sites for learning in the programme, such as the search for patterns in nature

as part of a unit of inquiry, and an investigation of frog anatomy in collaboration with the science department from the Senior School.

Photo 13. The 'Tranquillity Garden' at A1



The programme at A2 had a large, well-resourced, and attractive outdoor area, as well as access to the school's extensive bushland surrounds. Children were allocated responsibilities for the outdoor space, such as looking after the compost and the worm farm. The outdoors was also integrated into various projects and units of inquiry, as observed by researchers on arrival the first day:

Children had started working on a project on building nests. They had gone outside to look for signs of nests e.g. droppings, a dead bird had been found. Children worked on designing and creating nests, discussing with teachers what materials birds would use to build their nests. Researchers arrived as one of the teachers was with children outside, collecting materials to build a 'nest' in a big tyre. Children had to use only their 'beaks' (mouths) and 'claws' (toes) to pick up materials. Children had bare feet (despite the rain and cold). Lots of laughing as they tried to pick up and carry things with their mouths and toes. At one

point a crow started calling and the teacher said “I think the bird is interested in your nest”. Children then called back to the bird.

A unique feature of the programme at A2 was the weekly excursion into the extensive bushland that was part of the school grounds. Children were encouraged to take responsibility for preparing for these excursions, such as by dressing appropriately (such as with waterproof boots and clothing, sun hats, etc), and helping to prepare the trolley which carried drinks, snacks, and other appropriate supplies. Staff educated the children on safety and other protocols, such as ‘catch-up points’ on the paths, staying in sight of educators, and helping with pushing the trolley. A regular feature of the walks is visiting the chicken coop to interact with the chickens and collect any eggs.

Parents, siblings, grandparents and other family members also go on these excursions (see Photo 14). Family involvement in all aspects of the programme is emphasised in the A2 programme, and this includes the weekly outdoor excursions. The teachers explained that some parents had initial reservations about the children getting dirty, wet, etc on the excursions. But after actually coming on the excursions themselves, they would tell her that they now understood why the children got wet and dirty and how much the children enjoyed the experience. The researchers had the opportunity to attend one of the weekly excursions:

The group spent about two-and-a-half hours in the bushland, walking to the lake. Although it was a hot sunny day, with high temperatures even at 9.30am when the group set out, the children were happy and enthusiastic about going. On arrival at the chicken coop, children demonstrated care and skill in checking for eggs and handling the birds. When the group arrived at the lake, older students from the school were collecting tadpoles. Some of the ELC children joined in to look at what they had found. Even after the older students left, the children continued examining the water that had been collected from the lake.

Photo 14. Children and family members setting off for the bush at A2



To the researchers, the programme at A2 had a special emphasis on the outdoors, and appeared to place a high value on children's engagement with the natural world. This provided the children with some unique and enjoyable experiences, illustrated by the following observation from the bushland excursion:

The children were allowed to go into the lake. The researchers at first thought that this was because of the heat, but a grandfather explained that the children go in to the water even if it is cold. But perhaps because it was so hot, most of the children were eager to go in. They ran down a muddy slope and leapt into the lake (nearly all fully dressed), where they laughed and splashed and immersed themselves in the water. One boy came out dripping wet and beaming, ran up the slope and shouted with glee: "That was the best thing ever!"

Photo 15. Children at the lake at A2



While S2 had extensive and attractive grounds, the researchers did not observe the outdoors being integrated into teaching programme in the same way as happened at the other three sites. The timetable allotted certain times for children to go outside such as half-an-hour in the morning, and then more time late in the afternoon. While there was some fixed play equipment dotted round, the researchers did not observe these being used, and did not see other groups of children outside on the days that they were there. When the S2 group went outside, they used only a section of the outside area, some of it surfaced in concrete, as well as a corner of the grass (see Photo 16 below).

Around 11.00am, children went outside. A group of boys went to the storage cupboard and took out balls, hoops, and a scoop to catch balls, and took them to the central lawn area to play. A couple of children rode bikes. All activity was gross motor. Children independently packed up when it was time to go back inside.

Photo 16. The outdoor area used by the children at S2



The teachers at S2 did not mention any use of the outdoors in their teaching, and researchers' observations suggested that the outside space was regarded as a place for children to engage in physical activity, and as a break from the indoor programme, rather than as a site for learning that was integrated into the overall programme.

4.3 Play and play-based curriculum

The researchers sought to observe the four sites to investigate the place of play and play-based curriculum in their programmes. Observations focused on the provision of opportunities for children to engage in play, such as in the set-up of learning environments and provision of time and resources, as well as 'play outcomes' in terms of the frequency and quality of children's play, in particular their dramatic and constructive play.

The place of play in the programmes

The way early childhood learning environments are set up, indoors and outdoors, reflects the view of the role of play in the programme, and influences whether opportunities for children's play are supported or constrained. To engage in rich, sustained and complex play, children need blocks of time, plentiful resources, including open-ended materials, and supportive interactions with educators (Curtis & Carter, 2003; Dockett & Flear, 1999; Flear, 2013; Johnson, Christie & Yawkey, 1999). S1, A1 and A2 all

demonstrated evidence of supporting children's play, and of using play-based curriculum and play activity for teaching and learning purposes. Their learning environments were set up for play, and they provided time and resources for children to engage in both child-directed free play, and integrated play activity in their units of inquiry.

At S1, a generous space in one of the classrooms had been resourced with a variety of construction materials such as blocks, sections of bamboo piping, and industrial cast-offs such as tile samples. Children used these materials to create a 'car wash' that then became the scene of some dramatic play:

'Car Wash'

Children had created a 'car wash' from these materials. Later two boys (B1 and B2 (a child with additional needs)) came along to rebuild the car wash. They took a shiny object and calling it a 'diamond' hid it in the hollow of a block, then pushed another block next to it, and B1 talked of 'camouflaging' it with the block. B1 explained to the researcher that it was a car wash and 'these are the guns'. When asked why guns were needed, he replied that they were for 'the zombies'. He also said that 'this is our petrol station, more is allowed to come—it is under construction'. (see Photo 17 below)

Photo 17. 'Car Wash' built by children at S1



Both A1 and A2 placed an emphasis on play in their programmes. This aligned with the play based approach outlined in the IBO online resource (IBO, 2013), but also fits with the traditional valuing of play in preschool programmes for 4-5 year-olds in Australia. At A1, researchers observed that dramatic and constructive play were regarded as an integral part of the planned curriculum for each day, with children having access to space and materials for play throughout the day.

Researchers observed particularly high levels of activity in dramatic play at A1. This may have been related to an emphasis on 'communication' at the time, and a line of inquiry on 'stories'. A generous space had been set up around the book corner, and costumes and props based on the story 'The Gruffalo', and children were encouraged to act out the story, taking turns as actors and audience. Groups of children were observed engaging in this activity in the book corner for around two hours on the first morning of observations at A1.

A2 had similar provisions of time, space and resources for play and play-based curriculum in their programme. As well as a 'stage', and a cubby house and cooking area outside, there were strong provisions for constructive play, in particular with wooden unit blocks, both inside and outside. On the observation days, the block area inside was consistently occupied with groups of children engaged in mostly collaborative block construction.

Teachers regularly interacted with children, talking about what they were building and extending on children's ideas. For example, a small group of boys were creating a 'city' of skyscrapers, and the teacher asked them what their city was called ('Silly Billy City' was decided on). She then encouraged them to go to the writing table to write up a sign for their city, extending the play into a literacy activity (see Photo 18). Children's block constructions were regularly allowed to stand for days at a time, and children would return to them and build further with them.

Photo 18. Children at A2 writing a sign for their block city



S2 differed from the other three sites in that the programme there appeared to place little emphasis on play or play-based curriculum. While there were some construction and other play materials on some shelves, and a neat 'shop' set up for dramatic play in an adjoining corridor (see Photo 19 below), there was no specific time allocated for play apart from physical play in the outdoors time, and an hour at the very end of the day. While the shop was well-resourced with 'props', it did not appear to offer children an opportunity to change the layout, create their own props or materials, or even create a different imaginative play space.

Photo 19. The 'shop' at S2



Apart from the shop, there were no specific areas of the room set up for play as part of the programme, as there was for example at A1 and A2. A researcher recorded the following:

In preparation for Day 2, the researcher asked the teachers if the children had a time of extended play. The teacher said that there was free play timetabled between 5.00-6.00pm each day. The researcher indicated that she would come back to the centre to observe then. The teacher then queried the researcher as to why she was interested in observing children's play. The researcher replied that aspects of children's learning and development could be observed through children's play. The teachers offered to give the children an hour of free play on the second day, noting that the children would be very happy about that, and that they would be able to do that as they were not involved in a project at the time. When the teachers announced on Day 2 that there was to be an hour of free play, the children cheered. The teacher then said that the children should thank the researcher, and the children applauded. During periods of free play, the teachers worked on various tasks and did not involve themselves in the children's play.

Play outcomes

The researchers made descriptive observations of the quality and level of children's dramatic and constructive play. According to theory, and to research evidence collected over decades, children exhibit typical developmental progressions in both their dramatic and constructive play. These progressions are seen as both reflecting and supporting children's skills in abstract thinking, communication, and collaboration. A number of play scales and measures have also been developed, as a means of assessing and evaluating children's play (Hughes, 2010; Johnson, Christie & Yawkey, 1999). In observing children's play, the researchers used one of these, Smilansky's *Sociodramatic Play Inventory* (Smilansky, 1968) as a lens for observing children's dramatic play. Smilansky's Inventory can be used to assess the presence of the following elements in children's dramatic play:

- Role playing
- Make-believe transformations

- Social interaction in relation to the play episode
- Communication
- Metacommunication to organise, plan and evaluate the play
- Pretend communication 'in character' as part of role playing
- Persistence

Four-to-five year olds can be expected to demonstrate the capacity to engage in role play, transformations, social interaction, pretend communication, and to be able to sustain play episodes for at least 10 minutes. They can also be expected to be demonstrating increasing metacommunication skills, and to collaborate with other children in developing increasingly elaborate scripts for extended episodes of dramatic play (Hughes, 2010; Johnson, Christie and Yawkey, 1999). It was these latter aspects, as sign of increasing maturity in dramatic play, that researchers were particularly interested in observing in the play of children at the different sites.

Forms of construction play, including *block play* with wooden unit blocks, are common play activities in preschool programmes, and have been linked to later outcomes in areas such as mathematics and literacy (Hanline, Milton & Phelps, 2010; Wolfgang, Stannard & Jones, 2001, 2003). For the observation of block and construction play, the researchers drew on traditionally recognised 'stages of block building' that appear from infancy to around seven years of age, as described by Hirsch in the 1970's, based on work by Harriet Johnson (Hanline, Milton & Phelps, 2010; Hirsch, 1975). Progress through these stages is regarded as being linked to children's experience with blocks and construction materials (Hirsch, 1978). In the age period relevant to this study (4-7 years), children with opportunities to engage in block and constructive play, can be expected to be moving on from simple towers, enclosures and unnamed structures, to increasingly detailed and decorated structures that start to be representative of other other things, such as houses, buildings, ships, vehicles, farms, etc. (Hanline, Milton & Phelps, 2010; Wolfgang, Stannard & Jones, 2001). A further stage is where they represent fantasy themes, and constructions begin to be used as a basis for dramatic play. At the highest levels of development, children may create detailed representations of real or fantasy structures. For example they may create an airport, with control towers, runways, car parks and airport buildings, or a

castle with towers, stairs and rooms (Hirsch, 1978). The researchers were also interested in children's capacity to communicate and collaborate in their constructive play, as this can also be regarded as a marker of development in both constructive play and social skills, and also aligns with Learner Profile Attributes (IBO, 2013) .

Researchers observed dramatic and constructive play in all four programmes, but there were differences in the quality and focus of the two types of play across the sites. The most sustained and high level dramatic play was observed at A1, based on the book 'the Gruffalo'. Here children engaged in lengthy episodes of play, some individual children for over an hour. The play involved high levels of communication, including many examples of metacommunication ("You have to walk fast", "You need a deep voice"). The children also collaborated in organising and structuring the 'drama within the drama', in taking on the roles of performers and actors. These children more than met the typical age expectations in relation to Smilanski's dramatic play inventory for 4-5 yr olds. Children at S1 were also observed engaged in extensive dramatic play.

At S2, dramatic play was observed around the play 'shop' during the period of play granted for researcher observation. This play involved the basic skills of role taking, transformations, social communication and pretend communication, but there was minimal metacommunication, and play was sustained for only about five minutes at a time. In the A2 programme, children were observed engaging in sustained dramatic play around the stage, but on the days of observation, dramatic play was more often observed in conjunction with block play.

As with dramatic play, constructive play was observed at all four sites, but also varied in quality and focus between programmes. Block play appeared to be particularly well supported at A2, and children exhibited sustained focus and sophistication in their block constructions. They exhibited the highest forms of block play, often not seen until 6-7 years of age. In one example, a researcher observed several boys looking at a book containing a photo of a Tokyo skyscraper (see Photo 20 below). They then proceeded to recreate this building through block construction, returning frequently to the book, and focusing on detailed features of the building, both from the photo and from their imagination. This building also became a focus for dramatic play:

Looking at photos in a book on skyscrapers, one child picks up some cardboard shapes—“These could be on top” (points to features on the top of the building in the book). “This is best building ever Jack”. “Yes, we’re going to work all night”. “We still need long blocks. Look at the instructions.” He then tells the teachers: “We’re making a big building. That one” (Points to photo in book). Other boy says “Then we can make that one”. Teacher points to the photo of the building and asks where they’re up to. Boy points to halfway up the building—“We’re up to there”. The teacher tells the boys the building in the book is in Tokyo. Boy says “We haven’t finished it, it needs to be taller”.

Photo 20. Building a Tokyo skyscraper at A2



At A1, children also engaged in constructive play involving collaboration, planning and dramatic play. On the first day of observations there, several boys and a girl worked collaboratively for an extended time on constructing a Lego pirate ship, with detailed features and associated dramatic play scripts (see Photo 21 below). This had apparently been started the day before and was put on a table to be continued the next day. The construction was documented, and at group time the teacher talked of what good work had been

done in the construction of the ship, how photos had been taken, and some words recorded from the builders. Children at S1 also collaborated to use a variety of materials to make detailed constructions used as a basis for dramatic play (see earlier example of the 'car wash').

Photo 21. Building the Lego pirate ship at A1



The programme at S2 provided only a limited supply of unit blocks, plus some sets of construction materials such as lego, duplo, mobilo, struts, etc. Unlike the other programmes, there was no specific area of the classroom specifically set aside for construction activity. The researchers were interested to observe whether the limited materials and space for construction activity, and the apparent absence of time allocated to constructive play in the normal programme, would affect the quality of children's constructive play. On the first day of observation, when children were given some time for 'free play', the researcher made the following observations:

The boys chose constructive equipment, such as blocks and mobilo. The blocks were a small collection of small coloured wooden blocks. The block structures were very basic. There was little extended collaborative play apparent, apart from two girls who were arranging objects and materials in a basket. Two boys made a simple car with mobilo. One boy crated a number of items with mobilo. In the beginning of the play period,

the boys playing with the wooden blocks displayed little construction activity, and a lot of knocking down followed by super hero poses (possibly part of representation of computer game—see later). Eventually these boys settled down to more construction activity. A couple of boys constructed a simple ‘launcher’ of several blocks, where they would put objects on a block and flip the end, thus launching the object resting on it. Another boy worked on creating a more complex closed structure. Another child came along and knocked it over. I wondered why he wasn’t upset at having his structure knocked over, but I was later told by the research assistant that his structure represented an ‘Angry Bird’ structure, as found in a computer game where the player has to knock down structures to let the birds out.

This observation indicates that the constructive play of children at S2 was not as collaborative or developed in terms of planning and symbolic representation as that of children at the other sites. While there were some basic representational elements to the structures (the ‘car’, the ‘Angry Birds’), there was not the sophistication and detail, the links to extended narratives, that were observed in children’s constructive play at S1, A1 and A2. Children’s collaboration and communication was also much less at S2.

The children at S2 were given another hour of free play on the second day of researcher observations. Interestingly, this extra time for play appeared to enable the boys to extend their constructive play, and engage in more cooperative group planning and building:

Two of the boys carefully recreated the ‘launching pad’ that they had built the day before. A photo shows the launch pad, with a line of blocks ordered by colour. Two boys worked together on and off over the whole hour, building a mobile aeroplane and ‘flying’ it around the room. A group of mostly boys used the very small ‘Plus Plus’ materials to create effective spinning tops. The boys working on the launch pad then experimented with launching different materials, such as blocks, ‘Plus Plus’ pieces, etc. One boy suggested making a giant square with the wooden blocks, and other children took this up and worked together over several minute. They then made spinning tops and used them in their square. One of them suggested making a bigger square, and they then made two joined squares.

4.4 Discussion

Researcher observations provided evidence that the programmes at S1, A1 and A2 were meeting goals for the Early Years Stage of the Primary Years Programme, and were supporting the development in children of the relevant Learner Profile Attributes. In all three programmes, teachers were observed to be promoting inquiry-based learning, encouraged creative and critical thinking, and engaged in challenging interactions and sustained shared thinking with children. Children were active participants in the organisation of the programmes, and projects and units of inquiry were based on their interests, while also being vehicles for teachers to extend children's thinking and understanding.

In implementing their Early Years programmes, these three schools were also observed to have a strong focus on what is described as the 'three features of effective early years education' in the IBO's 'Early Years in the PYP' resource: relationships, environment and play (IBO, 2013). There was an emphasis on collaborative group work, and of taking responsibility and showing care and respect for others. Relationships with families were regarded as important, and active family involvement in the programme was observed in action or through documentation, particularly at A1 and A2. The environments of the three sites were all of a high standard, both indoors and outdoors. These were aesthetically attractive, reflected a sense of child 'ownership' and responsibility, and provided spaces and resources that supported inquiry-based curriculum. The outdoor environments were regarded as learning spaces to be integrated into the curriculum. They supported children's understanding and appreciation of the natural world, and promoted awareness and thinking about sustainability. The bush setting of A2 was a particularly remarkable and valuable resource for staff, children and families at the school.

S1, A1 and A2 were all observed to use play-based curriculum, and to provide environments and resources that valued and supported children's play. This produced positive play outcomes for children, and sustained, high level and complex play was observed in all three programmes (Dockett & Fler, 1999; Fler, 2013; Johnson, Christie & Yawkey, 1999). Interestingly, the programme at A1 appeared to provide particular encouragement for children's dramatic play, while at A2 researchers observed particularly high level and complex block play. This may be an example of how children's play reflects the focus of

their programme. At the time of observations, the programme at A1 was emphasising the Learner Profile Attribute of 'communicator', and engaging in a line of inquiry on 'stories'. On the other hand, of the four sites, A2 provided the most space and resources for block play, and teachers there were observed to be very supportive of this activity and to take it seriously.

In their play, children at the S1, A1 and A2 sites demonstrated a range of Learner Profile Attributes, and appeared as inquirers, knowledgeable, thinkers, communicators, caring, risk-takers and reflective. Children were observed as able to play both independently, and collaboratively with others. Teachers were seen to observe children's play, and to engage in sustained shared thinking with children about their play. These three programmes also supported children's emerging literacy and numeracy. This was largely done through integration of literacy and numeracy into projects and units of inquiry, and through play-based learning. Challenges and expectations for literacy and numeracy appeared higher in the S1 programme, than in the programmes of A1 and A2. This could be explained by the older average age of the Singapore children, as well as particular dynamics of the Singapore context. At A1 and A2, for example, literacy was very much based in play or as arising out of projects and lines of inquiry. On the other hand, S1 had established a designated half-hour for reading, in response to concerns that children should graduate from the programme with the literacy skills expected in Singapore mainstream school entrants. Otherwise the researchers observed the teaching of literacy and numeracy to be integrated into the inquiry-based learning that underpinned the programme.

The researchers were struck by the differences between the programmes at the two Singapore sites. In fact, the researchers who observed at the sites, found that there was more similarity between programmes at S1 and A1 and A2, then there was between the programmes at S1 and S2. This was despite the fact that S1 and A1 and A2 were in different countries and contexts (international school vs local private school) and involved children of different ages. S2 appeared to provide an effective, structured academic programme for its learners, with an emphasis on formal and teacher-led lessons in literacy, numeracy and Mandarin. There was evidence that children in the S2 programme were being given opportunities to develop Learner Profile Attributes such as being *caring*, *knowledgeable* and *communicators*. However,

compared to the other three programmes, there was less support for creative and critical thinking, inquiry-based learning, and risk taking. The researchers found limited evidence of PYP Early Years practices in the S2 programme, and from their perspective the S2 programme resembled the formal lesson-based approach typically found in mainstream, non-IB primary school classrooms.

At the time of observations at S2, researchers saw little inquiry-based learning, minimal use of the outdoors as a learning environment, and an apparent absence of play-based curriculum and limited opportunities for child-directed play. The apparent lack of a role for play in the S2 contrasted strongly with the integral role for play and play-based learning observed in the other programmes. The lack of value placed on play appeared to be reflected in the lack of opportunities for play, and the play outcomes of the children. Although on average a year older than the children at A1 and A2, the dramatic and construction play of the children at S1 was at a lower level, less sustained, and considerably less complex than that of children at the two Australian sites. Interestingly though, when given time to play over the two days of the researcher observations, by the second day the children at S1 appeared to be engaging in more collaborative and complex construction play, reflecting the view that given time and opportunity, older children can quickly acquire construction play skills (Hanline, Milton & Phelps, 2010; Hirsch, 1975).

The researchers also noted the pressures that the two Singapore sites faced to prepare their children in formal literacy and numeracy. This was apparently due to the expectations on children to be competent in these areas on entering the Singapore school system. Staff at S1 talked about the challenges of these expectations, as well as the apparent devaluing of play-based learning by parents and traditional cultural attitudes prevalent in Singapore (Fung & Cheng, 2011). The views of the staff at S1 on play-based pedagogy were in contrast to the approaches of the teachers at S2. At S2 play appeared to be recognised as something that children enjoyed, possibly used as a reward for work accomplished, but was apparently not regarded as a basis for learning in itself (Dockett & Fleer, 1999; Fung & Cheng, 2011).

Another interesting contrast between the programme at S2 and the programmes at S1 and the two Australian sites, was in the use of the outdoor environment. While all four sites had attractive outdoor environments, the outdoor space at S2 was dominated by manicured lawn and several pieces of

fixed play equipment. It did not appear to offer the same opportunities for learning, play and child 'ownership' evident in the outdoor spaces at the other three sites. There was no sense that the outdoors was an integral part of the programme, providing a context for promoting the Learner Profile Attributes, and creating opportunities for children to engage with the natural world and use the outdoors as a context for play. According to the timetable, children at S2 were provided with far less outdoor time than at the other three sites, and staff appeared to regard the time as an opportunity for children to engage primarily in motor activity, such as bike riding and playing with balls. It was hard to see how either staff or children could access the necessary resources, or have opportunities to 'act on' the space, to transform the outside environment at S2 into a site for inquiry, critical thinking, creativity or risk-taking. It should be noted that researchers spent only two days in the Singapore sites, and that S2 was in what they called a 'revision' period. However, the different set up of the outdoor environments at the two Singapore centres indicated ongoing contrasting staff perspectives on the role of the outdoors in the two programmes.

All four programmes declared that they were inspired by the Reggio Emilia approach. S1, A1 and A2 all presented programme features and learning environments that reflected the principles of Reggio Emilia including: the child-centred and child-directed programmes; the crucial role of the learning environment ('the third teacher'); the emphasis on beauty and aesthetics; the integration of the arts into the programme; the extensive documentation (involving children); the utilisation of the outdoors; the valuing of play and of play-based pedagogy. The principles of Reggio Emilia practice were not so evident to the researchers in the S2 programme.

5. Measures of Literacy

In employing the selected Early Literacy in English Tools (ELET) the research team was able to obtain a gauge of the overall literacy skills of the students across the different sites and see how these levels might compare across sites and national setting.

5.1 Early Literacy in English Tools

One of the instruments utilised to assess children's development level and to indicate their learning outcomes, more specifically in literacy, is the suite of Early Literacy in English Tools (ELET). Developed by Victoria's Department of Education and Early Childhood Development (DEECD), the ELET, as part of the Diagnostic Assessment Tools in English, are a suite of validated assessment tools that enable teachers to attain additional information about students' learning strengths and challenges in English (State of Victoria, 2011a). The diagnostic tools are designed to be used with students working towards AusVELS Foundation level.

The AusVELS reflect a curriculum incorporating the national Australian Curriculum within the existing curriculum framework developed for the Victorian Essential Learning Standards (VELS). The AusVELS is based on a triple-helix structure of three interconnected areas of learning called strands. These strands include: Physical, Personal and Social Learning; Discipline-based Learning; and Interdisciplinary Learning. The strands are further delineated into domains and dimensions¹, and each domain is structured by eleven levels, Foundation to 10. These levels are broadly associated with the years of schooling (refer to Table 2) and represent the typical progress of students at key points in their learning development.

Table 2. AusVELS Levels²

Nominal school level	AusVELS Level	Approximate Age (yrs)
Pre-school	Towards Foundation (A)	4-5
Prep	Foundation (B)	5-6
1	1	6-7
2	2	7-8
3	3	8-9
4	4	9-10
5	5	10-11
6	6	11-12
7	7	12-13
8	8	13-14
9	9	14-15
10	10	15-16

¹ Refer to the AusVELS official website for further information: <http://ausvels.vcaa.vic.edu.au/>

² Table modified from available table from the AusVELS website: <http://ausvels.vcaa.vic.edu.au/Overview/Levels>

The ELET tools assist teachers to plan for, and monitor the effectiveness of, literacy interventions throughout the school year and help keep track of student progress in their development of early literacy. Initially, the tool considered for this aspect of the data collection was the English Online Interviews (EOI). Widely used by prep teachers in Victorian government schools, the EOI is utilised to assess early literacy. However, due to unforeseen IT issues, it was not possible to use this instrument and the ELET was suggested by DEECD as an appropriate alternative.

Comprised of nine assessment tools, the ELET are skill specific and target the emergent literacy skills that develop reading, writing, and speaking and listening capabilities. The suite of tools include: alphabet letters, comprehending text, concepts of print, phonemes, listening and recall, oral language, phonological awareness, reading and writing. The tools provide students with small, achievable tasks that focus on one component of literacy. These tools are designed for students progressing towards AusVELS Foundation Level (ranges from ages 4-6 years old) and are divided into three tiers: 1. Foundation Level A (beginning, lower end of Foundation Level), 2. Foundation Level B (progressing, upper end of Foundation Level), and 3. progressing towards AusVELS Level 1 (typically around ages 6-7).

Table 3 outlines the complete suite of tools and identifies the specific skills that are assessed by these tools according to the three levels³. Completing all tasks within an assessment tool would provide an indicative AusVELS score for a student's literacy level.

For the purposes of this study and practicality, being mindful of time constraints, three of the nine tools were selected to be implemented. These included: concepts of print, reading, and early writing. As only a subset of the suite of literacy tools were implemented, this must be considered when gauging the overall literacy levels of the students across the research sites.

³ This table is publicly accessible through the following link, but note headings have been modified for the purposes of this report:
<http://www.education.vic.gov.au/school/teachers/support/Pages/date.aspx>

Table 3. Early Literacy in English Tools (ELET)

Diagnostic Tool	Skill *	1. Foundation Level A (ages 4-6) 5	2. Foundation Level B (ages 4-6)	3. Progressing towards AusVELS Level 1 (ages 6-7)
Alphabet letters	RLCL RUCL	Identify letters of own name	Name and give a sound for some upper and lower case letters	Name and give a sound for all upper and lower case letters
Comprehend Text	RC	Listen to <i>Ella and Luke</i> (book) and answer questions	Listen to <i>The Magic Pants</i> (book) and answer questions	Listen to <i>Crab and Fish</i> (book) and answer questions
Concepts of Print	CP P	Front of book Where is title Trace around a word/letter	Where does the story begin? Which way to go Name and purpose of full stop	Name and purpose of quotation marks & question marks
Listening and recall	CR	Repeat sequence of digits Repeat sentences Follow simple directions with common positional language	Repeat sequence of digits Repeat sentences Follow instructions to construct a figure	Repeat sequence of digits Repeat sentences
Phonemes	PA SW	No phonemes task at this level.	Identify initial phoneme Identify same initial phoneme Identify final phoneme Blend phonemes	Segment words into phonemes Delete phonemes Substitute phonemes
Phonological Awareness	WS	Identify syllables in words Identify words that rhyme	Blend onset and rime Identify words that rhyme	Generate words that rhyme
Oral Language	OL:C OL:R	Name objects in a picture Describe actions in a picture	Use positional language to describe objects in a picture Describe clothing in a picture	Engage in conversation with the teacher with a picture prompt <ul style="list-style-type: none"> - extent of utterance - coherence - vocabulary - clarity
Reading	RA RF RC	Read environmental print	Listen to text and match words back to the text Identify common sight words in text	Read a story well supported by illustrations with a simple repetitive structure <ul style="list-style-type: none"> - fluency - accuracy Answer questions about the story

Early Writing	W S WB	Distinguish writing from pictures and numbers Write own name Write other known words Orally dictate a sentence	Write high frequency words Write and read back own sentence	Spell some common words Write a dictated sentence Write and read back own sentence Build words with common spelling pattern
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* The second column of Table 3 shows the skills that are assessed in the Early Literacy in English Tools.

The abbreviations are listed below in the order in which they appear in the table:

RLCL: recognition of lower case alphabet letters RUCL: recognition of upper case alphabet letters RC: reading comprehension CP: concepts of print P: punctuation	CR: comprehension of retell PA: phonemic awareness SW: segmenting words WS: words and sounds OL:C: oral language conversation OL:R: oral language retell	RA: reading accuracy RF: reading fluency W: writing S: spelling WB: word building
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5.1.1 Concepts of Print

The tool focusing on concepts of print assesses:

Students' experience with books, knowledge about how to read books and the specific terms used when referring to books and other print, such as the 'cover' and 'front' of a book, a 'word' and a 'letter'. It also assesses students' ability to read from left to right with a return sweep and from top to bottom, their understanding of some other conventions in the construction of printed texts, their ability to match written to spoken words and to name and give a purpose for a full stop; and their knowledge of other common punctuation (State of Victoria, 2011a).

5.1.2 Reading

The tool focusing on reading assesses:

Students' ability to match print and spoken text in their immediate environment, read aloud simple print texts that include some frequently used words and predominantly oral language structures, use title, illustrations and knowledge of a text topic to predict meaning and use context, information about words and the sounds associated with them to make meaning as well as using illustrations to extend meaning (State of Victoria, 2011a)

5.1.3 Early Writing

The tool focusing on early writing assesses “the early development of students' writing skills through a brief snapshot of some key skills” (State of Victoria, 2011a). For example, distinguishing words from drawing and numbers, being able to write their own name or some other known words, attempts to spell words and so on.

5.1.4 Tool Administration

An Administration and Marking Guide is provided for each tool providing relevant information required to select, administer and mark the tasks. Across both the two Singaporean sites and two Australian sites the appropriate level for each tool was selected in consultation with the classroom teachers.

Appropriate times and spaces during the school day to administer the various tools with the students were also negotiated with the teachers. In S1, the ELET tools were integrated as another activity the students engaged with during their work time periods. In S2, the ELET tools were incorporated as more of an external activity where the participating students were pulled out of some after-school activities. At both A1 and A2 the ELET tools were mostly integrated as another activity the students engaged with during their work time, though in some cases students were also pulled out of some specialist classes (ie. music).

Each of the ELET tools were administered one-to-one and took about 10-15 minutes to complete all three instruments with each student. Although initially there was some concern with regards to the age difference between the students in the Singaporean and Australian sites (with the Australian students being significantly younger), and whether the 10-15 minute time frame would also be suitable, it was found that this timing also worked with the Australian students. The tools were also administered by a single member of the research team for consistency. The order of administration was as follows: 1. Concepts of Print, 2. Reading, and 3. Early Writing. Below, Table 4 displays an overview of student numbers by site, literacy tool and level of each literacy tool administered.

Table 4. ELET Administration (by site, literacy tool and level)

Site:	S1	S2	A1	A2
Number of students	13	14	17	23
Average Age (years: months)	6:03	5:11	5:06	5:05
Concepts of Print:				
1. <i>Foundation A</i>	9	0	17	19
2. <i>Foundation B</i>	4	14	0	4
3. <i>Level 1</i>	NA	NA	NA	NA
Reading:				
1. <i>Foundation A</i>	NA	NA	17	21
2. <i>Foundation B</i>	6	8	NA	2
3. <i>Level 1</i>	7	6	NA	NA
Early Writing:				
1. <i>Foundation A</i>	NA	NA	17	23
2. <i>Foundation B</i>	6	8	2 *	1 **
3. <i>Level 1</i>	7	6	NA	NA

*Based on their performance at level I, 2 students were also assessed at level II.

** Based on teacher recommendation

5.1.5 Overall Literacy Levels

In employing the ELET tools the research team was able to gain a sense of the overall literacy skills students had across the different sites, as measured by the selected tools. These literacy levels were also compared across sites (or programs) and national setting to see whether any patterns emerged. Drawing on how students at each site performed individually against the Administration and Marking Guide for each tool, the general performance of each group for each selected tool, and taking into consideration researcher notes on the interactions with students during the administration of the tools, an overall standing for each group was estimated. Again, do note that only three of the nine ELET tools were administered in this study and that the estimated overall standings for each site are based on these tools. These are summarised in Table 5.

Table 5. Overall literacy levels (by research site and tool)

Site	Concepts of Print	Reading	Early Writing	Overall Standing	Expected Standing (by age)
S1	Foundation A* (4-5 yrs)	Between Foundation B (5-6 yrs) & Level 1 (6-7 yrs)	Level 1 (6-7 yrs)	Between Foundation B (5-6 yrs) & Level 1 (6-7 yrs)	Foundation B (5-6 yrs)
S2	Level 1 (6-7 yrs)	Between Foundation B (5-6 yrs) & Level 1 (6-7 yrs)	Level 1 (6-7 yrs)	Level 1 (6-7 yrs)	Foundation B (5-6 yrs)
A1	Foundation A (4-5 yrs)	Foundation B (5-6 yrs)	Foundation B (5-6 yrs)	Between Foundation A (4-5 yrs) & Foundation B (5-6 yrs)	Foundation A (4-5 yrs) & Foundation B (5-6 yrs)
A2	Foundation A (4-5 yrs)	Foundation B (5-6 yrs)	Foundation A (4-5 yrs)	Between Foundation A (4-5 yrs) & Foundation B (5-6 yrs)	Foundation A (4-5 yrs) & Foundation B (5-6 yrs)

*S1 students were all administered the tool at the first level (Foundation A) as per teacher recommendation. However, the students are likely to be operating at a higher capability in this literacy skill.

Based on these approximations the site with the most developed set of literacy skills was S2, followed by S1, with A1 next and A2 with the least developed set of literacy skills (particularly in their writing). As mentioned earlier, this is likely to be at least partially attributable to the older age of the students in the Singaporean sites compared to the Australian sites. As shown in Table 4 above, students at A1 and A2 were almost a year younger than those at the Singapore sites.

Overall, the literacy levels at all sites were fairly developed. Students from all sites operated at literacy levels at or better than what would typically be expected for their age groups. Pre-school students from the Singaporean sites with the average student age of 6 were performing at Prep (5-6 years old, AusVELS Foundation) or Year 1 (6-7 years old, AusVELS Level 1) levels. The pre-school students from the Australian sites with the average student age of 5 years 5 months were performing at pre-school (4-5 years old, towards AusVELS Foundation) or Prep (5-6 years old, AusVELS Foundation) levels. Despite the age difference, the literacy levels of the students at the Australian sites were not that far behind that of the students in the Singaporean sites. These approximations are discussed further in the subsequent sections.

5.2 Singaporean Sites – S1

A total of 13 students participated in the literacy assessments in S1. Following the classroom educators' recommendation, all students at S1 were administered the tools at the first tier (i.e. Foundation A) for the concepts of print tool, and at second and third tiers (i.e. Foundation B and Level 1) for the other tools. Overall, this group of students' literacy levels were quite developed with the majority of the students positioned between AusVELS Foundation Level B and Level 1. This corresponds to performance expectations of students between Prep (5-6 years old) and Year 1 (6-7 years old). With an average student age of 6 years and 3 months, S1 students were performing at and better than what would typically expected for their age (also refer to Table 4).

Based on the *concepts of print* tool, students were clearing the first and second tier tasks, indicating that they were performing beyond AusVELS Foundation A. One student undertaking the second tier did not know what a

'full stop' was called, but knew what to do when she saw it in a text (ie. 'You stop reading' or 'End of sentence').

With regards to the *reading* tool, approximately half the students were demonstrating skills in the AusVELS Foundation Level. Of this group of students a few indicated skills in the boundary between AusVELS Foundation Level and Level 1. The other half of students at S1 were displaying skills in AusVELS Level 1. Almost all students in this half achieved all items, including reading a short story with word-for-word accuracy, self-correcting skills and fluency, and also responding appropriately to reading comprehension questions.

In the *early writing* tool most of the students in S1 were displaying skills at AusVELS Level 1. All students were able to write their names and all but 2 students could also write sentences, indicating most of these students have developed beyond the AusVELS Foundation Level. Students who can write a recognisable sentence that they generate, not by copying, and also read the sentence with a recognisable correspondence are likely to be close to being able to work in AusVELS Level 1 Writing in AusVELS Level 1 (State of Victoria, 2011a). Some examples include: 'I love you', 'this is the Bet school', 'the cat waNt oN the BaD'.

While most items in the early writing tool were achieved by S1 students, their misses were around making new words with the same base (ie. words ending with /at/ and /un/). These questions were included to identify the emergence of some spelling strategies and the results suggest that perhaps this is an area for development.

5.3 Singaporean Sites – S2

A total of 14 students participated in the literacy assessments in S2. Based on the classroom educators' recommendation all students at S2 also were administered the tools at second and third levels (i.e. Foundation B and Level 1). This group of students' literacy levels were also quite developed with most students broadly operating at AusVELS Level 1, corresponding to Year 1 students (6-7 years). With an average student age of 5 years and 11 months, S2 students were performing better than what would typically be expected for

their age and demonstrated the most developed literacy skills among the school sites (also refer to Table 4 above).

With the *concepts of print* tool students were indicating skills at the AusVELS Level 1, with about half of them achieving all tasks. With regards to the items students missed, some were still experiencing some difficulty in demonstrating 1-1 correspondence when the researcher was reading a short story out loud and they were to follow along the text with their finger. Interestingly, in contrast to some of the students in S1 who did not know what a 'full stop' was called but recognised its function, some students at S2 knew it was called a 'full stop' or 'period' but had misconceptions about what it indicated to readers. Some examples include: 'You turn the page' or 'You keep reading'.

Based on the *reading* tool approximately half the students were demonstrating skills in the AusVELS Foundation Level. From this group a few students demonstrated skills in the boundary between AusVELS Foundation Level and Level 1. The other half of students at S2 were displaying skills in AusVELS Level 1. According to DEECD (2013c, p.1) students working at this level should be able to easily identify 5 words they know in a set passage of text, which these students were able to achieve. Items that were missed by these students were more around the reading comprehension tasks, suggesting that this group have some strengths (ie. recognising or decoding words) but also have some areas to develop (ie. reading comprehension) in their overall reading skills.

In the *early writing* tool most of the students in S2 were displaying skills at AusVELS Level 1. All students were able to write their names and all but one student could also write sentences, indicating most of these students have developed beyond the Foundation Level. This is also supported by the fact that all students achieved items 12 and 14⁴, which would have indicated as operating in the boundary between Foundation Level and Level 1. Some examples of sentences include: 'I Hav NiNJa Paur.', 'I liKce to Play everyday', 'I like to Pay fotBol ave daY'. Interestingly, in the sentences students were requested to generate about half of the students mentioned liking play. This reflects the findings on children's perspectives in Chapter 10, where children

⁴ Item 12 requested students to write a dictated sentence ('I went to the park'); Item 14 requested students to read aloud a self-generated sentence they had written down.

were asked to write about their favourite activity in their programme, and children at S2 wrote overwhelmingly about play.

5.4 Australian Sites – A1

A total of 17 students participated in the literacy assessments in A1. Based on the classroom educators' recommendation, all students at A1 were administered the tools at the first and second tiers (i.e Foundation A and Foundation B). Most students were generally positioned between AusVELS Foundation Level A and Foundation Level B, corresponding to performance expectations of students between pre-school (4-5 years old) and Prep (5-6 years old). Although this group of students' literacy levels are not as developed when compared to the Singaporean sites, this could be at least partly attributed to the significant age difference between the children in the Singaporean and Australian sites. With an average student age of 5 years and 6 months, and a wider age range than other sites (4 years, 7 months – 5 years, 11 months), A1 students were performing at or better than what would typically be expected of their age (also refer to Table 5 above).

In the *concepts of print* tool students were indicating skills at Foundation A. However, 10 of these students achieved all items and could possibly be progressing closer towards Foundation B. Two students experienced difficulty in tracing a word and a letter with their finger (on the cover of a booklet) and this could be due to their developmental progress in their fine motor skills. There was also some confusion between what a letter or a word was for a couple of students. It is likely that this subgroup of students were operating at AusVELS Foundation B.

According to the *reading* tool, overall the students demonstrated skills in the AusVELS Foundation Level . All the students had successfully achieved the first 3 items, signifying that they had progressed past Foundation A'. A total of 14 students achieved all items, with the remaining 3 missing only 1 item which asked what the writing on the toilet sign said ('MEN' and 'WOMEN'). The last item would have indicated skills in the boundary between Foundation Level and Level 1, asking the student to look at a picture of a 'Danger' sign (deliberately selected to be visually busy to see if students can still identify the word 'danger') and give a plausible explanation of what the other words might

mean. However, unfortunately, in the preparation of the tool copies of this particular page was accidentally left off and therefore not assessed.

Based on the *early writing* tool all students in A1 were displaying skills at AusVELS Foundation Level B. A number of students indicated skills in the boundary between the Foundation Level and Level 1 and one student seemed to be working towards AusVELS Level 1. All students were able to write their names and all but one student could also compose sentences (recorded by researcher) to describe a picture selected from a book. The oral composition of sentences reveals student's understanding of what a sentence is and the variety of ways in which sentences can be constructed (State of Victoria, 2011a, p.10).

Some examples of dictated sentences include: 'They are so bored. They're really messy. They are really...their made up colors are falling off' (S3 -2), 'They tried to make themselves fancy but it doesn't work. There is paint that is their skin, but the rain comes' (S4-3). Interestingly, about half of the students were not able to write down words that they knew, but were able to compose sentences that scored 1 of 2⁵. For example: 'They're all wet in the rain and all the animals are sad' (S6-2). This seemed to indicate while some of the students may have more limited skills in their writing, they have an understanding of what a sentence is and some ways in which sentences can be constructed.

5.5 Australian Sites – A2

A total of 23 students participated in the literacy assessments in A2. Following the classroom educators' recommendation all students at A2 were also administered the tools at first and second levels (i.e. Foundation A and Foundation B). Overall, the students of this group were positioned between AusVELS Foundation Level A and Foundation Level B, again corresponding to performance expectations of students between pre-school (4-5 years old) and Prep (5-6 years old). Although in comparison to the other sites the literacy levels at A2 were the least developed, however, with an average student age

⁵ The sentences dictated by students were scored using the following guide: 0- no sentences, strings of words or phrases; 1- gives one or two simple sentences; 2- joins simple sentences. with common conjunction, 'and', 'and then'; 3- constructs a complex sentence, eg. includes a phrase or clause.

of 5 years and 5 months A2 students are still performing at what would typically be expected for their age (also refer to Table 4 above). Although the significant age difference with the Singaporean sites should be considered, A2's literacy levels are still generally lower than those at A1. Based on the *concepts of print* tool students were indicating skills at the AusVELS Foundation Level A. The majority of the students (19) undertook the tool at level one and 7 students achieved all items. Most of the group can indicate the title of a book and trace a letter with their finger. The items missed by students ranged, though many of them missed the tracing of a word task. Similar to students in A1, there seemed to be an unclear distinction between 'word' and 'letter' with some students responding to both requests by tracing a letter. For the few students who completed the tool at level two, all of them missed the items that would have indicated skills in AusVELS Level 1 thereby supporting the notion that overall the students at A2 are operating at Foundation A level. However, again the ages of the students need to be considered in terms of their development progress.

With the *reading* tool, overall the students demonstrated skills at the AusVELS Foundation Level B. Almost all the students had successfully achieved the tasks signifying that they had progressed past Foundation Level A. The majority of the group undertook the tool at level one and 16 students achieved all items and a few indicated as operating at Foundation Level A. Unfortunately, again the question that would have indicated skills in the boundary between Foundation Level and Level 1 was not assessed due to preparation error.

In the *early writing* tool most of the students in A2 undertook the tool at tier one and all displayed skills at Foundation Level B. About four students indicated in the boundary between AusVELS Foundation and Level 1. All students were able to write their names and distinguish writing from numbers and scribbles. A few students had difficulty distinguishing numbers when asked to point to some numbers on the same page. About half of the students could also compose sentences to describe a picture selected from a book. For example: 'They were picking flowers. They were watering the garden and then it started to rain and they got their umbrellas' (S7-2).

Similar to an interesting pattern that emerged at A1, about half of the students were not able to write down words that they knew, but were able to compose

sentences that scored 1 or 2. For example: 'When it rains and the sun goes on, you put an umbrella so it doesn't go on your head' (S4-2), 'There's a tree house and there's a boy planting some seeds and a boy climbing the tree house' (S6-2), 'There's some people in the tree house and there's someone on the swing. This lady has an umbrella 'cause it's too hot' (S16-2). Again, this seemed to indicate that although some of the students may have more limited skills in their writing, they have an understanding of what a sentence is and some ways in which sentences can be constructed.

5.6 Summary

In utilising the selected ELET tools the research team was able to obtain a gauge of the overall literacy skills of the students across the different sites and see how these levels might compare across sites and national setting. Based on the approximations developed from the groups' general performance in the selected literacy tools, the site with the most developed set of literacy skills is S2, followed by S1, with A1 next and A2 with the least developed set of literacy skills.

While the overall standing of the groups can be compared or ranked in this way, it is important to note that there are also smaller nuances that make these distinctions less clear. Upon closer inspection of the data some interesting contrasts emerged. In general, it seemed while the students at S1 recognised and could articulate the function of a period (ie. 'You stop reading' or 'End of sentence'), they did not necessarily know it was called a 'period'. In contrast, students in S2, who were assessed to have more developed literacy skills, often identified a period as 'a period' but when asked about the function of period there were some misunderstandings or misconceptions (ie. 'You turn the page' or 'You keep reading'). Also, in the Australian sites while there were a significant number of students who were unable to write down words that they knew, they seemed to have a good understanding of sentence construction and were verbally quite expressive.

Broadly speaking, the literacy levels at all sites were fairly developed. Students from all sites operated at literacy levels at or better than what would typically be expected for their age groups. Pre-school students from the Singaporean sites with the average student age of 6 were performing at Prep (5-6 years old, AusVELS Foundation) or Year 1 (6-7 years old, AusVELS Level

1) levels. The pre-school students from the Australian sites with the average student age of 5.5 months were performing at pre-school (4-5 years old, towards AusVELS Foundation) or Prep (5-6 years old, AusVELS Foundation) levels. Despite the age difference, the literacy levels of the students at the Australian sites were not that far behind that of the students in the Singaporean sites. It is also worthy to note that although literacy development was raised as an important concern by parents, particularly for some parents in Singapore (refer to Family Perspectives in Chapter 11), students across all sites were performing either at or better than age appropriate expectations.

As discussed, the differences in the literacy outcomes of children at the Singaporean sites and the Australian sites, is at least partly attributable to age, with the students in Singapore being older. However, the qualitative data from researcher observations and educator interviews (see Chapters 3, 4 and 8) also shows a greater emphasis on the teaching of academic literacy in the Singapore programmes, particularly in S2 which had the most formal and structured approach to the teaching of literacy. The researchers propose this focus on literacy teaching as another factor in the between country differences.

The different approaches to the teaching of academic literacy in the programmes in Singapore and Australia can be considered as reflective of contextual influences. In Singapore, expectations that children will have acquired literacy skills before entering school lead to cultural and parental pressures for formal literacy instruction, as experienced by both Singapore programmes (see Chapters 8 and 11). These pressures were an influence on the Singapore preschools to include the formal teaching of literacy in their programmes. On the other hand, the Australian educators, working with younger children, did not see it as part of their role to teach academic literacy within their preschool programmes. This position is reflective of the general attitude of preschool educators in Australia in regard to the formal teaching of literacy.

6. Developmental School Readiness

This section describes the quantitative tool used in the evaluation of children's performance on a measure of developing competency seen as reflective of aspects of school readiness. The tool provides a general perspective on

cognitive development, and children's abilities to undertake a number of tasks reflective of school readiness.

6.1 The Who am I developmental assessment tool

Who am I? (de Lemos & Doig, 1999) is a developmental assessment instrument that asks children to write their name, copy a picture of a circle, cross, square, triangle, and diamond, write some numerals, letters, words, a sentence, and finally, draw a picture of themselves. Responses to each item are scored from 0 to 4 based on research-based criteria.

Who am I? provides a child-friendly and reliable assessment of young children's development. In particular, *Who am I?* assesses the underlying cognitive processes that under-pin early literacy and numeracy. The *Who am I?* developmental and normative scales are based on the responses of some 4000 Australian children, that included children from both Government and a large number of private schools across Australia. It therefore provides a good basis for comparisons with the Programmes in this study.

The tasks that make up *Who am I?* fall into three categories: copying tasks, symbols tasks, and a drawing task. The copying tasks are based on research into copying tasks for assessing developmental level, and which have been shown to be valid across different cultural groups. The symbols tasks are measures of spontaneous writing that have been shown to provide good indications of children's growing understanding of the uses of print. The drawing task is based on the use of drawings for assessing development, and has a long history in educational research, where the stages of children's artistic development are well known.

Who am I? is designed to be administered to individual children, or to small groups of children, without affecting the validity of the results. In the present instance, the assessment was conducted either individually or in small groups. For example, at A1 assessment was administered to groups of three children.

6.2 The Sample

Who am I? was administered to a total of seventy children across four Programmes. Table 6 shows the number of children assessed in each of the Programmes.

Table 6. Sample sizes

Programme	Number of children
A1	17
A2	23
S1	15
S2	15
Total	70

The sample of 70 children was divided almost evenly between the sexes (34 boys and 36 girls), and Table 7 shows the distribution of boys and girls assessed at each Programme.

Table 7. Sample size by sex

Programme	Number of boys	Number of girls
A1	8	9
A2	13	10
S1	4	11
S2	9	6
Total	34	36

Of the seventy children, only eight were left-handed. This is approximately ten per cent, and is below the normal proportion of 15% being left-handed. However, of the eight left-handed four of these were boys and four were girls, whereas the population proportion has twice as many boys as girls being left-handed.

The age ranges of children assessed are shown in Table 8. The children attending the two Australian Programmes were of commensurate ages as can be seen in the table. A similar pattern can be seen in the age ranges at the two Singaporean Programmes. However, the children attending the two Singaporean Programmes were older, on average, than their Australian counter-parts by at least half a year, although as can be seen in Table 8, there was some over-lap in the ages of the four groups of children.

Table 8. Ages by Programme

Programme	Average age (years:months)	Age of eldest child (years:months)	Age of youngest child (years:months)
A1	5:06	5:11	4:07
A2	5:05	5:10	4:11
S1	6:03	6:08	5:08
S2	5:11	6:04	5:03

6.3 Scoring Who am I?

Children's responses to *Who am I?* items are ranked on a scale of 0 to 4, with four being the highest possible ranking. All responses were scored by one of the *Who Am I?* authors using processes to ensure rater consistency with the protocol set out in the *Who am I?* Manual.

A total raw score for each child was calculated by adding the item rank scores. In addition to the total, three sub-scales also were calculated: Copying, Symbols, and a Picture of Me. The total score was also transformed, through a Rasch model analysis (Rasch, 1960), to provide interval data for statistical analysis and reporting on a scaled score.

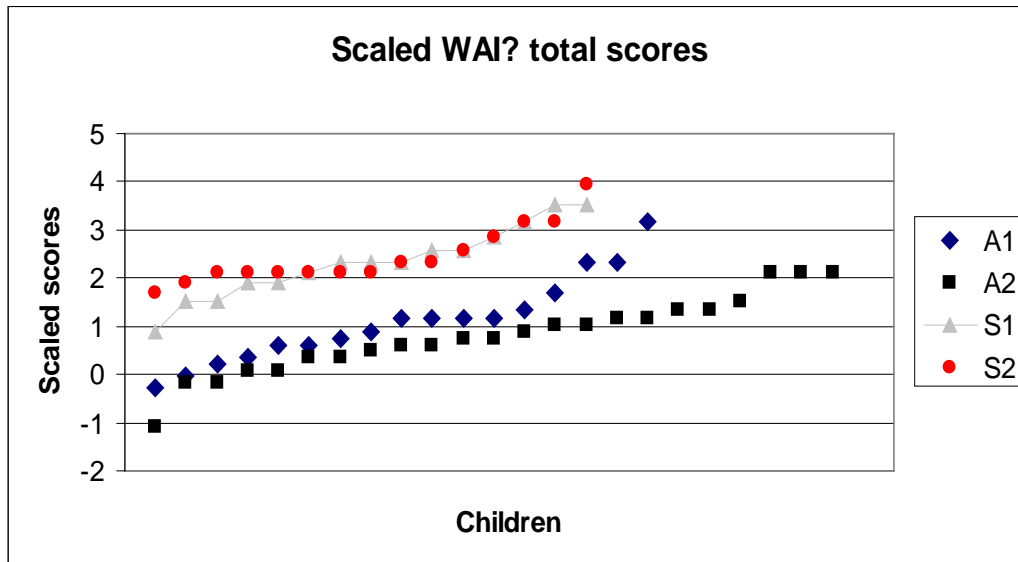
6.4 Analyses

As noted earlier in this report, for the purpose of anonymity each Programme site has been given a code: A1 and A2 are the two Australian sites, and S1 and S2 the two Singaporean sites. The overall performance for all children is shown in Figure 1, based on the (Rasch) scaled total scores. Note that the Rasch scaled scores for WAI? range from -4 to +4, although in Figure 1 the scale has been re-scaled for the purpose of clarity. In Figure 1 the children have been ordered by their overall WAI? scaled score thus showing the range of scores in an orderly manner.

It is interesting to note that the children in the two Singaporean Programmes have a very similar pattern of response to the *Who am I?* items, whereas the Australian children are more varied in their responses. Note also that, although

A1 had fewer children ($n=17$) in the study than A2 ($n=23$), the scores of the best performing children from A1 were very similar to those from S1 ($n=15$) and S2 ($n=15$), despite students at A1 being younger than those at S1 and S2.

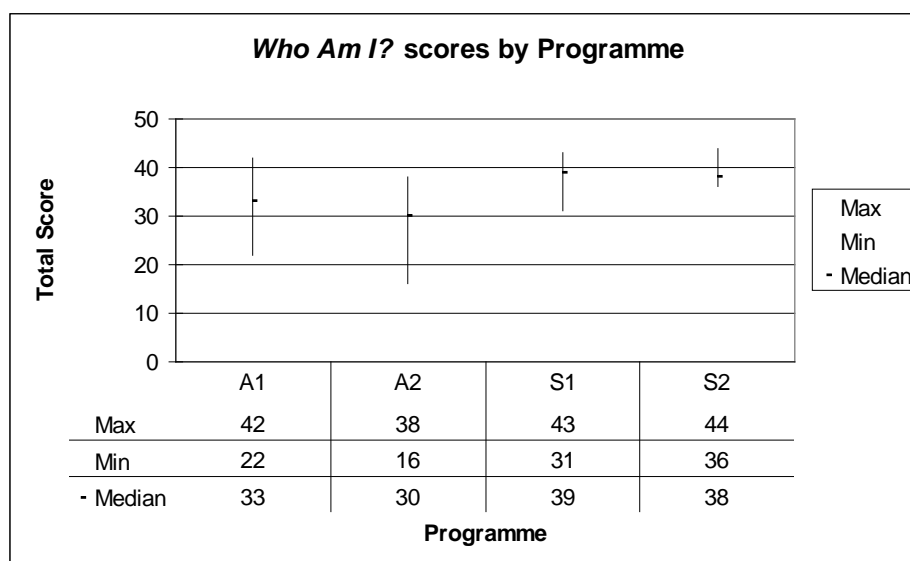
Figure 1. Scaled total scores on Who am I?



More detailed information on overall performances in the different Programmes is in Figure 2 below, where children's performance is represented by their WAI? raw scores. Thus, the scores range from a raw score of 16 up to a raw score of 44. The median (middle) raw score is shown by a '–' in Figure 2. it is clear that A1, A2, and S1 have a greater proportion of their children below their medians, but that S2 has the majority at, or above, its median. This indicates that the S2 scores are less spread than those of the other Programmes.

In Figure 2 we see that the lower performing Programmes have larger spreads of raw scores. A Mann Whitney U test on these data showed that A1 and A2 performances were not statistically significantly different from one another ($U = 241.5$, $p = 0.208$) and nor was the difference between S1 and S2 performances ($U = 101$, $p = 101$). This result is not unexpected when one looks at Figure 1. Further, a Mann Whitney U test comparing the Australian Programmes with the Singaporean Programmes showed that the difference was statistically significant ($U = 341$, $p = 0.003$). Again, this is evident in Figure 1.

Figure 2. Total raw scores on Who am I?



The raw score ranges were compared with the *Who am I?* norm sample (de Lemos & Doig, 1999) which are based on the responses of some 4000 Australian children, in a range of prior-to-school settings. These norms provide a means of comparing any sample to Australian children at a range of educational levels. These comparisons, with the norm group, show that:

- A1 children's performance on the WAI? ranged from a minimum raw score of 22 to a maximum raw score of 42. This was slightly better than that of the Australian norm sample of prior-to-school children, whose scores ranged from 20 to 42. This latter raw score (42) is more typical of Australian children in Year 2, which suggests that some of these children are benefitting greatly from their prior-to-school experiences.
- A2 children's performance on the WAI? ranged from a minimum raw score of 16 to a maximum raw score of 38. While 16 is lower than the minimum of the Australian norm sample of prior-to-school children, the A2 maximum raw score (38) shows that the A2 children whose raw scores are in this upper part of the raw score range are benefitting very much from their educational experiences.
- S1 children's performance on the WAI? ranged from a minimum raw score of 31 to a maximum raw score of 43. While 31 is higher than the maximum of the Australian norm group of prior-to-school children, the S1 maximum raw score is better than best performing children of the Australian norm

group at Year 2. Thus, the S1 children, whose raw scores are in this upper part of the raw score range, are benefitting very much from their educational experiences.

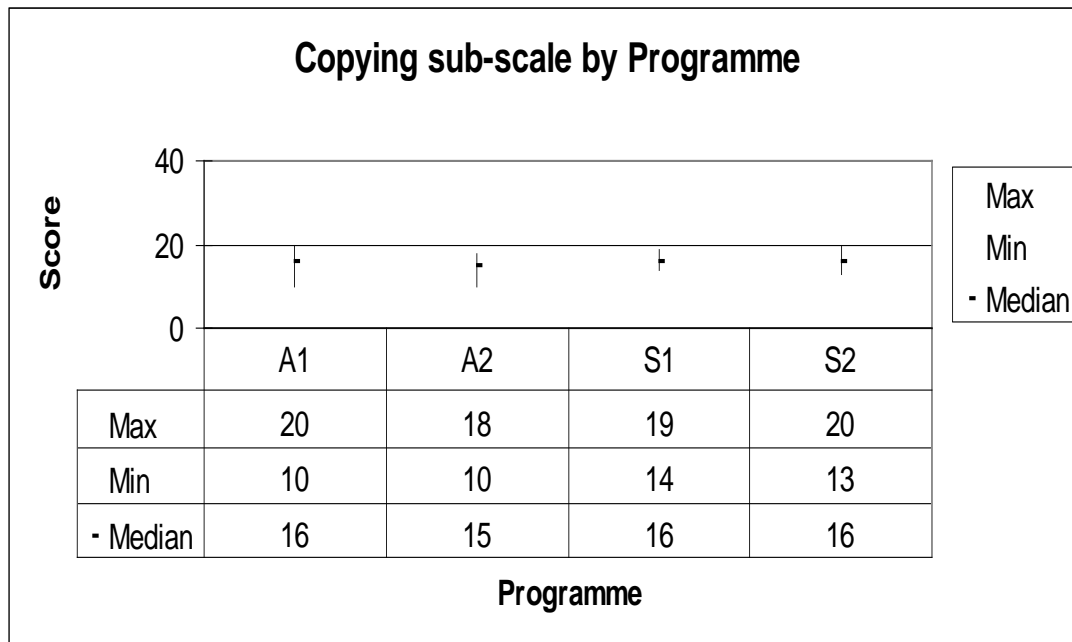
- S2 children's performance on the WAI? stretches from the maximum of the Australian norm sample of Year 1 children (35) to beyond that of the Australian norm sample of Year 2 children (42). Given that the age of the S2 children is lower than that of Australian Year 2 children, this result may be evidence of the strong impact of their prior-to-school educational experiences.

In summary, not only do S1 and S2 have overall higher performers, but also they have a smaller spread of performance. That is, they appear to have supported all their children to do well, rather than simply some of them. This, of course, is exactly the same result as seen in International studies such as *Trends in Mathematics and Science Studies* (TIMSS) and the *Programme of International Student Assessment* (PISA), where Singaporean students have a higher mean score and a smaller standard deviation, than students in Western countries. However, there are at least two caveats: first, the Singaporean pre-schools in this study have a mix of local and expatriate children, and second, a group of younger children may be more likely to have a greater spread of scores than those of a higher age. These factors would need further investigation to be sure of the causes of these strong performances.

6.4.1 Sub-scale results

To provide a more nuanced picture of the WAI? results, outcomes for each of the instrument's sub-scales were examined. The first of these, the Copying sub-scale, is based on children's responses to the WAI? items requesting a copy of a circle, cross, square, triangle, and diamond. The maximum score is 20.

Figure 3. Sub-scale scores on Copying items

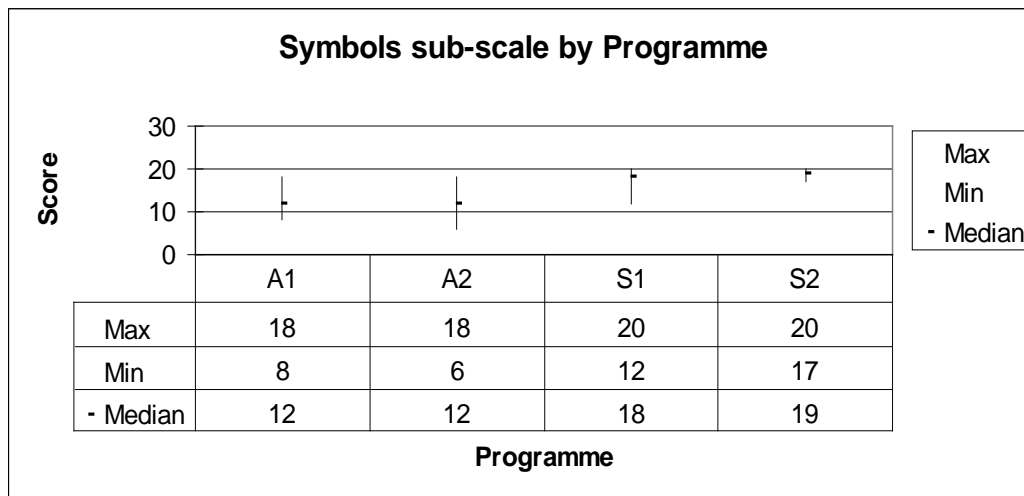


As can be seen in Figure 3, there is little difference between the results of children in any of the Programmes. The higher minimum score for children at S1 and S2 is most likely due to the higher age of these children. The summary raw score statistics (Mean = 15.64, SD = 2.33) for the four Programmes fall at the upper-most level of the Australian pre-school norm group's distribution. This is expected as the norm group had a mean age of 4 years and 9 months, compared to the four Programmes' mean of 5 year and 6 months.

The Symbols sub-scale includes responses to write your name, write some numbers, letters, words, and a sentence. The maximum score is 20. In a similar manner to the Copying sub-scale, the Symbols sub-scale results show a slightly higher performance by children at S1 and S2 (see Figure 4). These differences appear to be slight, and, again, age may be a contributing factor.

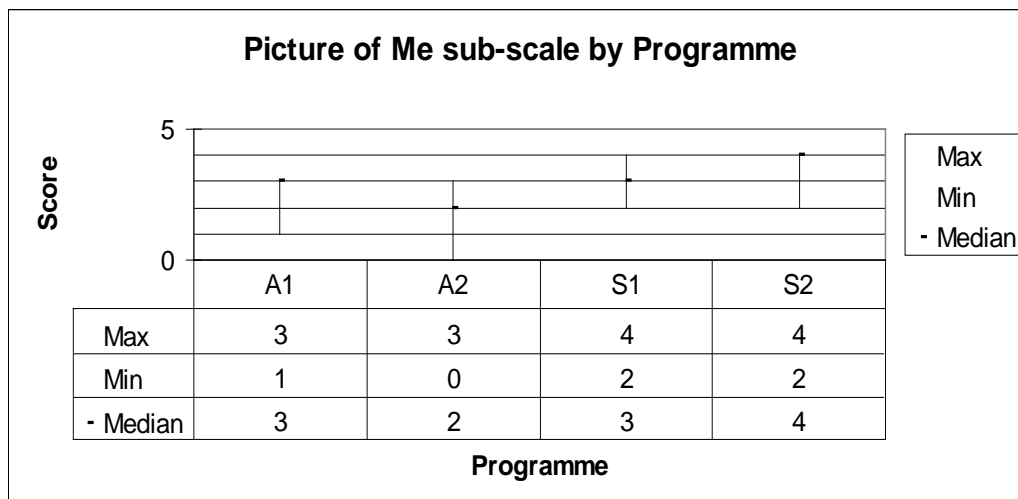
The summary raw score statistics (Mean = 14.89, SD = 3.99) for the four Programmes fall close to the same as the Australian Year 1 norm group, whose average age is 5 years and 11 months, nearly a half year more than the mean age of the children in the four Programmes.

Figure 4. Sub-scale scores on Symbols items



The final sub-scale, a picture of oneself, has one item. The maximum possible score is four. Perhaps the most interesting feature of the results for this sub-scale is that more than 50% of children's responses at S2 were 4, as shown by the median score (see Figure 5). This result is interesting given the lesser emphasis on art experience, apart from drawing, in the S2 Programme, compared to the other Programmes, as described previously in Section 4.4.

Figure 5. Sub-scale scores on Picture of Me item



Further, to put these results into a perspective, the percentage of top results was compared with Australian normative information from the *Who am I?* administration manual (p. 22), which is shown in Table 9 below. That is, results were compared with Australian norm sample of children. Table 10 provides the results for each of the Programmes.

Table 9. Mean percentage of highest scores by Australian norm group (Adapted from de Lemos & Doig, 1999)

Task	Norm Groups	
	Pre-school percentage (Mean age = 5:0)	Year 1 percentage (Mean age = 5:11)
Name	42	72
Diamond	11	53
Numbers	17	45
Letters	39	66
Words	11	27
Sentence	6	18
Drawing	3	3

For the Name item, A2 had results (70%) better than the Australian Pre-school norm sample (42%). Moreover, as illustrated in Table 8, students in the Australian norm group were, on average, only 5 months younger than students at A2. This result is similar to A1, where 64% received a top score compared with the Australian norm group (42%). Again, it can be seen that the age of the Australian norm group was, on average, 6 months older than students at A2. Meanwhile, 100% of children at S1 and S2 received a top score, which was significantly above the Australian norm group of pre-school results (42%) and better than the Australian norm group for Year 1 (72%). This is remarkable as the mean age of the S1 and S2 children was 5:8 years, and the mean age of the Year 1 Australian norm group was 5:11.

The draw a Diamond item results for the two Australian Programmes were comparable (A1 12%, A2 13%) to the pre-school Australian norm group results (11%), however the Singaporean pre-schools' results (S1 33%, S2 27%) were lower than that of the Year 1 Australian norm group (53%).

Table 10. Percentage of top scores by Programme

Programme	Name	Diamond	Numbers	Letters	Words	Sentence	Pic
A1	48	12	29	47	29	0	0
A2	70	13	22	43	0	22	0
S1	100	33	100	93	60	80	33
S2	100	27	100	87	80	87	53

The results for the writing Numbers item were similar for the two Australian Programmes (A1 29%, A2 22%), and well above that of the Australian Pre-school norm group (17%). The Singaporean Programme results (S1 100%, S2 100%) were better than the Australian norm group of Year 2 children (97%) who are on average 7:5 years of age.

On the writing Letters item, the Australian pre-schools children (A1 47%, A2 43%) performed better than the Australian norm group of pre-school children (39%), while the Singaporean responses (S1 93%, S2 87%) were better than those of the Year 1 Australian norm group (66%).

The writing Words item produced a range of very different performances. A1 children's performance (29%) was much better than the Australian Pre-school norm group (11%), but A2 children's performance (0%) much lower than the Australian pre-school norm group (11%). S1 children performed much better (60%) than the Year 1 Australian norm group (27%). S2 children had results (80%) very much better than the Australian Year 1 norm group (27%).

The writing a Sentence item also produced a wide range of results. Children from A2 were very much better (22%) than the Australian pre-school norm group (6%), while A1 children's performance (0%) was very much less than that of the Australian pre-school norm sample results (6%). S1 had results (80%) very much better than the Australian Year 1 norm group result (18%), while S2 had results (87%) slightly better than S1. Both of the Singaporean Programmes' performances were commensurate with the Australian Year 2 norm group performance (83%).

Finally, the Draw a picture item had no child from A1 or A2 able to succeed at Level Four, the top score. This was less than the Australian Pre-school norm group result (2%). S1 children's performance (33%) was similar to the Australian Year 2 norm sample (34%), and S2 children performed better (53%) than the Year 2 norm sample (34%).

6.4.2 Comparisons between Programmes

In order to compare Programme results a series of non-parametric statistical tests were conducted on the *Who am I?* data. First, the two Australian Programmes were examined for any significant similarity or difference in their children's response patterns. The results of a Chi-square test, with five degrees of freedom, was 10.57, with $p > 0.06$, which is larger than the criterion alpha value of 0.05. This result indicates that differences in the response patterns of the children at the two Australian Programmes were not statistically significant.

Second, the same test was used to examine the similarity, or not, of the two groups of Singaporean children. The results of the Chi-square test, with six degrees of freedom, was 1.38, with $p > 0.96$ which is larger than the criterion alpha value of 0.05. This result indicates that differences in the response patterns of the children at the two Singaporean Programmes were not statistically significant.

While these results show that the children in the two Programmes in each country are performing in a similar manner, the question of difference in performance between countries remains. Therefore, the data from each country were aggregated to give an overall Australian and Singapore score for the highest level of performance on the key items, and these were subjected to a Chi-square test of significance. Table 11 shows these aggregate scores.

Table 11. Number of top scores by country

Country	Name	Diamond	Numbers	Letters	Words	Sentence	Pic
Aust	27	5	10	18	5	5	0
Sing	30	9	30	27	21	25	13

The results of this analysis was a Chi-square value of 20.27, with 6 degrees of freedom, giving a p-value of 0.003. This is lower than the criterion alpha value of 0.05, and therefore the Programme aggregate scores of the Singapore Programmes are significantly different from those of the Australian Programmes. An examination of the data suggests that this difference occurs across all of the items.

Effect size comparison

Returning to the full dataset of 70 children, a Cohen's *d* Effect Size measure was calculated. This measure provides an unbiased, unit free, estimate of the relative difference in performance of the Australian and Singaporean children on *Who am I?* The result for the full dataset, Cohen's *d* was 1.92 (Hedge's unbiased version 1.87), and for the reduced (age-matched) dataset, Cohen's *d* was 2.26 (Hedge's unbiased 2.16). In both cases the Singaporean children, as a group, out-performed the Australian children on the *Who am I?* items.

6.5 Summary

Generally, children in both countries performed at levels commensurate with, or better than, expected for their age compared with the *Who am I?* Australian normative sample. This indicates that, in general, these children were receiving benefit from their socio-cultural background and their pre-school education over and above the general Australian normative population. However, these results were not spread evenly over the children in the four Programmes, with children in the Australian Programmes appearing not to benefit as much as those in the Singapore Programmes.

A possible explanation for these differences in outcomes between the Australian and the Singaporean Programmes lies in the qualitative data derived from the researcher observations and the staff interviews. This data shows that S1 and S2 included a stronger focus on numeracy and literacy in their Programmes (see Chapters 3, 4, 8 and 9), which may have contributed to stronger outcomes on the *Who am I?* Educators at A1 and A2 on the other hand, did not see it as part of their role to teach formal academic skills to children, and such instruction was not observed in their Programmes. This is in line with the typical view of early childhood educators in Australia that the formal teaching of academic skills is not usually an appropriate component of pre-school programmes.

It should also be noted, however, that children from S1 had the highest mean scaled score, and the narrowest spread, of all the Programmes. While both S1 and S2 included elements of academic literacy and numeracy in their Programmes, their pedagogical approaches were quite different. It was the play-based inquiry-led S1 Programme rather than the more structured academic programme at S2 that produced the best outcomes on the *Who am I?*, suggesting that factors other than the teaching of basic literacy and numeracy may also have played a role.

7. Teacher Assessment of Children's Learning Skills

This section deals with children's development of skills that underpin successful learning. An on-line assessment tool was used, based on teachers' perceptions of individual children's learning skills. This tool facilitated both the collection of the data and its analysis.

7.1 The Learning Skills Measure

Perceptions of children's learning capabilities, such as work confidence (e.g. *raising their hand to answer a difficult question*), persistence, organisation (e.g. *planning time*), and work co-operation was assessed through the *Learning Skills* measure that is part of the *Social-Emotional Wellbeing Survey (SEW)*, an on-line tool developed by the Australian Council for Educational Research (ACER, 2013). The Early Years version of the survey was used, designed for children in the first two years of school, in a typical age range of 5-7 years. This version involves teachers completing 50 on-line survey items on aspects of each child's social and emotional development.

Results from the completed surveys can then be compared with ACER's 'All Schools' data which includes results from more than 32,000 surveys (ACER, 2013). This tool provides data on children's social and emotional development, including in relation to learning, and for comparison to ACER's data set on larger populations.

The researchers were concerned, however, at the burden that would be placed on participating teachers in asking them to complete a 50 item survey on each participating child. It was decided therefore to inquire of ACER if it was possible to conduct the survey using only items from the 'Learning Skills' area,

as it was felt that skills in this area would be most relevant to a study evaluating processes and outcomes of educational programmes. ACER agreed this was possible, and participating teachers were instructed to complete the identified Learning Skills items, and mark all other items as 'Strongly Disagree'. These other items were not included in the analysis. Because three of the four participating sites were not able to submit the necessary minimum 10 surveys for each sex, to generate the automatic online analysis and result, ACER also agreed to provide the researchers with the raw data from the surveys, to enable comparative analysis between Programmes.

7.2 Analyses

The raw scores from a sample of 69 students were analyzed using a Masters Partial Credit Model (Masters, 1982) a member of the Rasch (Rasch, 1960) family of Item Response Theory (IRT) models. The Quest (Adams & Khoo, 1996) was used to perform the Masters Partial Credit Model analysis. This analysis provides information about both the students and the items against which they were rated. The Wright Map, Figure 6 below, shows the details in a graphical form. The SEW has twelve items in the *Learning* strand, that are interspersed among the other items, and are shown in Table 12. Each statement is scored for how well the statement characterises the student. These ratings run from 1 (Strongly Disagree) to 4 (Strongly Agree). Note that items 17, 22, and 26 are reversed. That is, the best ranking for these is Strongly Disagree in Table 12 below.

Table 12. Item statements for Learning

Item Number	Item statement
1	When learning something new or difficult, show independence by not immediately asking for teacher help.
4	Want to do his/her very best.
8	Raise his/her hand to answer a difficult question even when unsure if the answer is correct.
10	Put in lots of effort when something is hard to do until it is completed.
12	Put away materials, toys or other items in the appropriate storage areas.
13	Possess co-operation skills when working in small groups (e.g., doesn't insist on going first, asks before grabbing things, shares).

15	Display confidence when trying new activities, using new equipment, exploring new places or when venturing out on a planned outing.
17	Become easily frustrated and give up when attempting a new task that he/she finds to be difficult.
18	Be unaware of time (e.g., late in putting things away, being ready to start a new activity).
22	Lose concentration easily when faced with demanding learning tasks.
23	Remember to pack his/her bag with everything to take home at the end of the day.
26	Have a hard time settling down after participating in an exciting or physical activity.

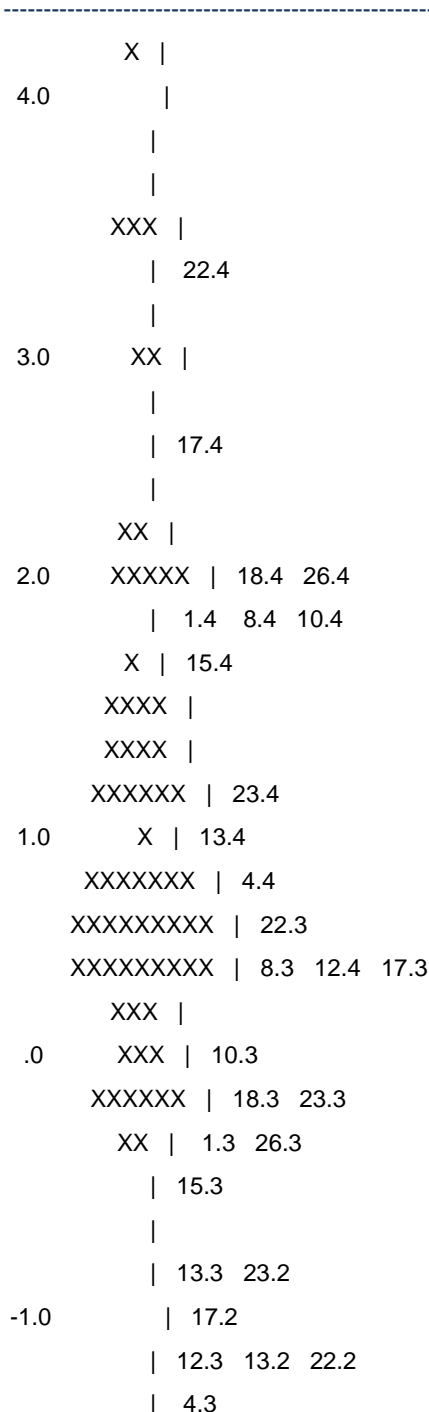
In a Wright map (Figure 6), there is a scale in logits on the left-hand side and a vertical line in the centre dividing the Map into two columns. The left-hand column shows the distribution of students along the logit scale (where an X denotes 1 student in this case). The students are ordered from the least positive overall rating at the bottom up to the most positive at the top.

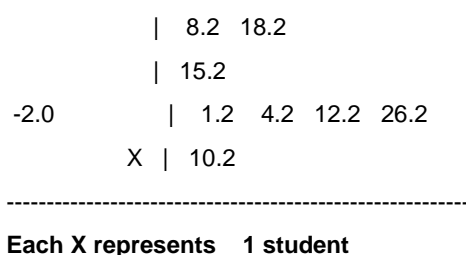
On the right-hand side of the Wright map the items are ordered from the least positive ratings (Strongly Disagree) at the bottom to the most positive (Strongly Agree) at the top (remember that items 17, 22, and 26 are reversed). The items are described on the Wright map by a numeric code as follows: the number indicates the item number (Table 12, left-hand column) followed by a period (.) and a rating numeral (1, 2, 3, or 4) where 1 indicates Strongly Disagree, to 4 indicating Strongly Agree, but reversed, of course, for the three reverse items. The point at which a student moves from a lower rating to a higher rating is called a threshold and it is these that are represented on the Wright map. Thus, there are no ratings of 1 visible, as rating 2 indicates at what point on the scale the likely rating is 2, and no longer 1. For example, 22.4, represents the threshold where ratings change from 3 to 4 for item 22. As this is a reversed item, 4 is the least likely rating to be assigned to a student: that is, a rating of Strongly Disagree, (the student loses concentration easily when faced with demanding learning tasks). Clearly many students do lose concentration easily as only four students were ranked at this level.

The Rasch analysis has a unique characteristic in that both the students and the rating levels are placed on the same scale. In effect, this means that it is possible to estimate the likelihood of a student with a particular scale score being rated in a particular category (Strongly Disagree, Disagree, Agree, or

Strongly Agree) for each item. For example, a student with a scale score of 1 logit has a likelihood of having been rated as Strongly Agree for item 13, *Possess co-operation skills when working in small groups (e.g., doesn't insist on going first, asks before grabbing things, shares)*, but is more likely to be ranked as Agree (Rating 3) for item 1: *When learning something new or difficult, show independence by not immediately asking for teacher help*.

Figure 6. Wright Map of IB students on SEW Learning strand





In fact, as the item ratings are positioned lower on the scale than the student's position, the likelihood of the student being given these ratings decreases. In an opposite manner, item ratings on the scale above this student's scale score, of 1 logit, are less likely to be assigned to that student, and the likelihood of non-assignment increases as the distance above their position on the scale increases. Thus, as we can see on the Wright map that only four students (X) are 'in' the rating four area of the scale, thus, losing concentration is a common issue for most of the students

7.2.1 Sub-group analyses

All sub-group analyses used item estimates anchored on all student data and thus are all on the same scale. Descriptive statistics for the sub-groups are shown below in Table 13.

Clearly, although the Singapore Programmes had a slightly better mean score (-0.09) than the Australian Programmes (-0.29), the large Standard Deviations indicate that these differences are not significant (Singapore 1.12; Australia 1.30). These small differences are apparent, too, in Table 13 below.

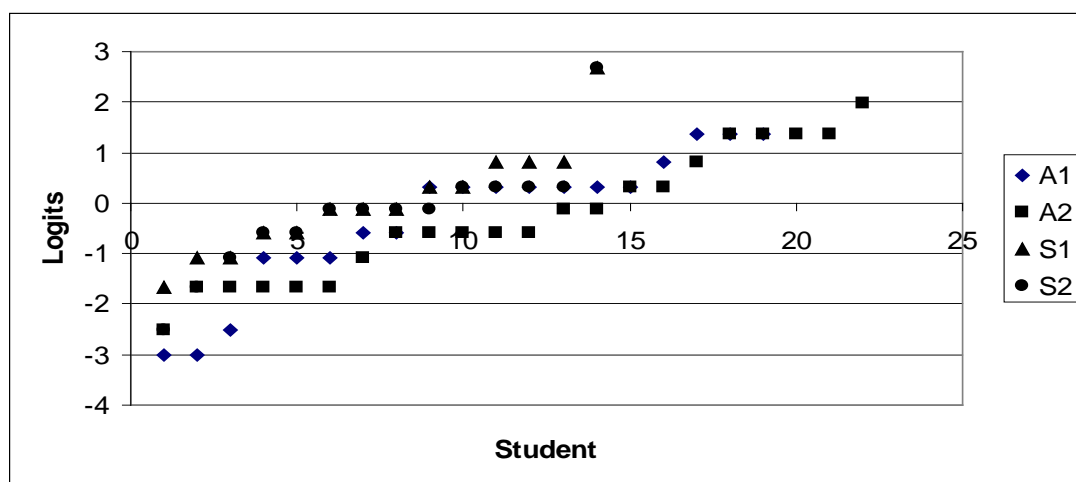
Table 133. Means and Standard Deviations for all groups

Group	Statistic	Value
All	Mean	-0.21
	SD	1.22
A1	Mean	-0.30
	SD	1.37
A2	Mean	-0.28
	SD	1.26
S1	Mean	0.03
	SD	1.08
S2	Mean	-0.21
	SD	1.18

Group	Statistic	Value
A1 + A2	Mean	-0.29
	SD	1.30
S1 + S2	Mean	-0.09
	SD	1.12

The student logit scores were sorted in ascending order to show more clearly the patterns in performance. As can be seen in Figure 7, student performance across all Programmes was mixed, and the majority of students from all Programmes performed in a very similar manner. However, there are two outliers, both Singapore students, whose scores were the same, and the highest of all. In Figure 7 the symbols for these two students, a dot and a triangle, are super-imposed.

Figure 7. IB students' logit scores by Programme



7.2.2 Comparisons

Table 14 provides details for the performance of both sexes on the SEWS Learning scale, showing performances are not even across Programmes. For example, the mean scores of the boys ranges from a low of -0.47 (S1) to a relative high of -0.15 (A2). The girls, on the other hand, range from a low of -1.06 (A2) to a relative high of $+0.05$ (S1). Not only do the scores differ between the sexes, but also within them, with the girls from S1 having the highest mean score, and the girls from A2 having the lowest. The question arises whether or not any of the differences between sub-groups of students has any real meaning.

Table 144. Performance of Boys and Girls

Group	Statistic	Boys	Girls
<i>All</i>	Mean	-0.21	-1.09
	SD	1.90	2.52
A1	Mean	-0.32	-0.83
	SD	1.26	-1.37
A2	Mean	-0.15	-1.06
	SD	1.11	1.06
S1	Mean	-0.47	0.05
	SD	0.60	1.26
S2	Mean	-0.18	-1.10
	SD	0.92	1.08

An Effect Size (Cohen's *d*) was calculated for pairs of sub-groups and revealed mainly small effects, with some exceptions. The Effect Sizes are presented in Table 15, where the more interesting Effect Sizes are highlighted. Non-highlighted rows are not discussed in the text. In Table 15, Effect Sizes are in favour of the first named group or Programme.

The first highlighted row in Table 15 shows that the difference in performance between boys and girls (over all four Programmes) is $d = 0.39$, which Hattie (2008) suggests is likely to be teacher effects. That is to say, that overall, boys appear to be benefiting more than girls from the Programmes, with the assumption being that all educators were equally effective. Alternatively, it is possible that the IB, however implemented, is providing a larger benefit for boys, an issue that bears further investigation on a larger scale.

The next highlighted row, a comparison of Singaporean and Australian girls shows a difference (0.49) in favour of the Singaporean girls. This is greater than expected from teacher effects, and may well indicate that the socio-cultural differences between Singapore and Australia are having an impact on the results on the SEWS for the girls. Implementation of the IB Programme, for example, may differ between the two countries, with a greater emphasis in

Singapore on aspects of the SEWS such as Item 4 (Want to do his/her very best) and Item 10 (Put in lots of effort when something is hard to do until it is completed), having a particular influence on the girls in one or both of the Singapore Programmes. Also, a further factor to consider is that the Singaporean students are, on average, up to a year older than those in the Australian Programmes.

Table 155. Effect Sizes for paired groups

Sub-groups	Effect Size (<i>d</i>)
Sing vs Aust	0.16
Aust2 vs Aust1	0.02
Sing1 vs Sing2	0.21
Boys vs Girls	0.39
Sing vs Aust (Boys)	-0.04
Sing vs Aust (Girls)	0.49
Aust2 vs Aust1 (Girls)	0.2
Sing1 vs Sing2 (Girls)	0.93
Aust2 vs Aust1 (Boys)	0.14
Sing2 vs Sing1 (Boys)	0.34

While the difference between performances of girls in the two Australian Programmes is low, and possibly a teacher effect, the largest *d* value (0.93) in Table 15 is that between S1 Girls performance and that of S2 Girls. This large effect size indicates that the S1 IB Programme is having a much greater benefit for their girls, on the assumption that socio-cultural factors for the two Singapore Programmes are similar (it should be noted that S1 had a larger number of expatriate children).

The difference between the two Singaporean Programmes for boys, is again, in the range of Hattie's (2008) teacher effect, as the difference between S2 Boys and S1 Boys was 0.34.

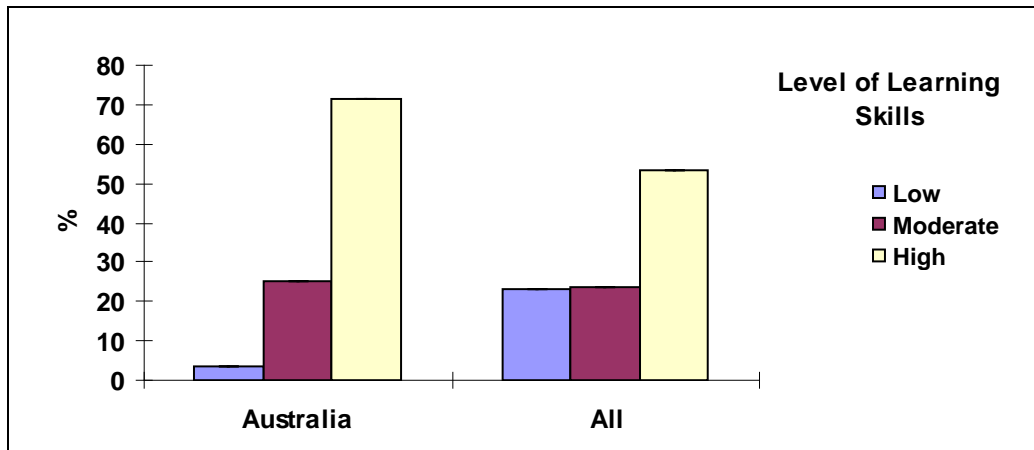
A further interesting effect in Singaporean Programmes, is that the S1 students are benefiting slightly more ($d=0.21$) from their experience than those students at the S2 Programme. As with the girls, this suggests that the educators at S1 are providing a programme of more benefit for their students in terms of the SEWS Learning scale. This is supported by the qualitative data collected, which showed characteristics of the S1 Programme which included an emphasis on inquiry-based learning, challenging learning experiences, and encouragement of child autonomy and self-direction (see Chapters 3,4,8 & 9). The findings on the perspectives of children at S1 on their programme and their own learning, also indicated a programme that supported children's awareness and sense of efficacy in their own learning (see Chapter 10). These findings contrasted with the qualitative data on S2, where the Programme was more teacher-directed, less focused on children's interests and less encouraging of child self-direction.

7.2.3 Comparisons on a larger scale

Comparisons of the four Early Years Programmes with the All Schools results is complicated by the fact that, for reporting purposes, there are set minima for the number of students involved. In the case of this study, one Singaporean and one Australian Programme did not satisfy the SEWS requirements for automatic on-line generation and reporting of results. However, the combined responses from each country do satisfy the requirements and so these combined groups have been used to provide some idea of how well the two countries compare with the SEWS All Schools results in the area of Learning Skills.

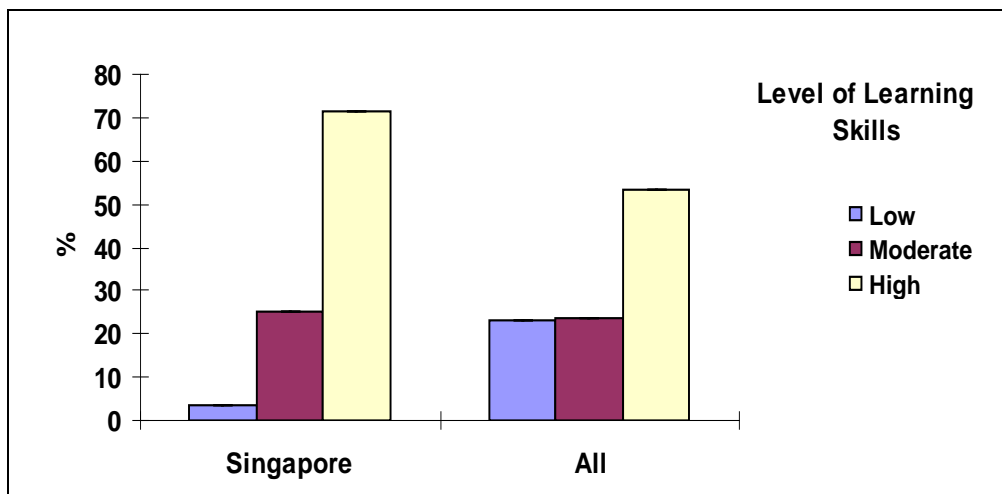
In the following two figures (Figures 8 and 9), comparisons are shown between the Australian pre-schools' performance, the Singaporean pre-schools' performance and All schools performance. Figure 8 shows that the Australian pre-schools' performance is different, and better, than the All schools' performance. A Chi-square test performed on these responses showed that the difference was significant (Chi-square = 11.94, $df = 2$, p -value = 0.003, less than the α value of 0.05).

Figure 8. Australian pre-schools performance against all schools



The same procedure was conducted on the results for the Singaporean pre-schools. While the results were not quite as dramatic, it showed that similar to the Australian Programmes, they too were performing significantly better than the All Schools students (Chi-square = 6.35, $df = 2$, p -value = 0.04, less than the α value of 0.05).

Figure 9. Singapore Programmes' performance against all schools



Finally, a Chi-square test of Australian *versus* Singaporean performance showed that, although different, the difference was not statistically significant (Chi-square = 1.58, $df = 2$, p -value = 0.454, greater than the α value of 0.05). However, as noted above, children in the four Early Years pre-school Programmes in both Singapore and Australia are performing better than the All Schools sample.

7.4 Summary

There would appear to be benefit for IB students in the four Early Years Programmes in this study, although as shown earlier, the benefit is not even across Programmes. All four Programmes are benefiting their students more than are the overall schools. This is particularly interesting in light of the fact that the targeted age range of the Early Years version of the SEW is children in Prep to Year 1, around 5-7 years of age, whereas on average children at the Singapore sites were aged 5-6 years, and at the Australian sites were aged 4-5 years.

Comparing the Singapore and Australian sites, the composite Australian Programme performance was better than that of the composite Singaporean Programme. This contrasts with the results of the WAI and, drawing on the qualitative findings of this report, this may reflect the different emphasis of the Australian and Singaporean Programmes. Again it is interesting to note that the Australian children were, on average, a year younger than the Singaporean children. It is possible that different implementations of the IB Programme, and social and cultural factors play a role in these differences. What the findings do indicate is that, particularly for the very young children at A1 and A2, a strong play-based and inquiry-led programme within a PYP framework appears a significant support to the development of children's learning skills.

This finding is important in light of the findings from the educator, co-ordinator and parent interviews (see Chapters 8, 9 and 11). These interviews indicated an underlying concern for some parents about the effectiveness of the Early Years programmes to prepare their children for formal schooling. The interviews also suggested some pressure on educators, particularly at the Singapore sites, to introduce more teaching of formal academic skills into the Programmes. While educators were understanding and responsive to parent's anxiety that their children should demonstrate basic academic skills that they (parents) perceive as essential preparation for entry to formal schooling, these findings provide evidence that these Early Years programmes are equipping their children with the basic learning skills essential to their future academic success (Bernard, Stephanou & Urbach, 2007). By informing and educating parents about the important role of these learning skills in preparing children for school, and the success of their Early Years programmes in supporting the

development of these skills, educators are in a position to allay some of these parental concerns.

These issues need to be investigated further, and in more detail, as a *caveat*, for the results presented here, is that the number of children, and Programmes, was small. Clearly a larger study would provide a more refined and precise examination of the development of children's learning skills in Early Years programmes. A further limitation was the lack of comparison between Programmes in the same country. For example, it was not possible to compare development of learning skills in the quite different Programmes at S1 and S2.

8. Educator Perspectives

As part of building a 'Mosaic' picture of the four Early Years programmes, the researchers sought the perspectives of educators on their programmes this was done through interviews that explored educators' teaching philosophies and values, and their views on issues and challenges they encountered in implementing their programmes.

8.1 Interview procedures

Two educators were interviewed from each site by a member of the research team. Interviewees had a range of teacher and other qualifications and experience. Teacher qualifications of interviewees included a three-year Diploma of Teaching, four-year teaching degrees, and Master of Education postgraduate degrees. Educators had acquired their qualifications from universities or institutes in Singapore, the United Kingdom or Australia. They were asked about their perspectives on the programme, their own educational philosophies and values, and any challenges they felt they faced. The interviews were 'open-ended' in that, while the researchers had certain topics they wanted to explore with the educators, the direction of the interview was also influenced by questions and issues that arose out of the conversations.

There were two educator interviewees at each site, designated as E1 or E2 (for example E1 at A2, or E2 at S1). The researcher conducted the interviews in person at the sites, and the length of the interviews ranged from 7.48

minutes for E2 at S2, to 56.19 minutes for E1 at A2. Other interviews ranged between twenty-three and thirty-six minutes. Each interview was transcribed, and then analysed and coded according to a number of themes. These included: interviewees' perspectives on inquiry-based learning; learner profile attributes; the Reggio Emilia approach, and other relevant curriculum frameworks; play-based learning; learning environments and child ownership of these; academic learning and school readiness; and issues and challenges they faced.

8.2 Inquiry-based learning

Educators at S1, A1 and A2 were experienced in working with the PYP and inquiry-based learning, and all strongly articulated their support for it. They also provided detailed examples of how they implemented this approach. They talked of how they saw inquiry-based learning as both effective, and reflective of their own educational values. The two teachers at S1 expressed what they saw as the value of inquiry-based learning:

...it's quite amazing in the sense that ...all the curriculum areas permit and encourage inquiry. It just makes it so much more powerful than, like in traditional classes, like maths class, history classes, English class. E1 (S1)

...I think the PYP places the learner right at the centre...it says that we believe that children learn best through structured inquiry.... E2 (S1)

The educators at A1 and A2 also saw inquiry-based learning as in tune with their early childhood pedagogy of planning teaching and learning based on children's interests: '*...and so the idea then is to reinforce the fact that if they know something that they want to inquire about, you can do that*' (E1, A2).

The two educators at S2 talked of how they had only recently started to work within the IB and the PYP, and with inquiry-based learning. They described how since the school had adopted the PYP, they now had a say in their planning objectives: '*Before that was more like "these are the objectives...work the curriculum into the objectives*' (E1, S2). The comments of E1 at S2 reflected her experience of transitioning into the inquiry-based approach:

I grew up in Singapore and I've been exposed to the local system, so I guess it will be a lot more top down, "Hey listen to me, I am your teacher"...I guess if I wasn't here I wouldn't have seen this perspective of what you want to do, what do you want to learn...

While supportive of inquiry-based learning, the educators did raise some issues they saw in implementing some aspects of inquiry-based learning within the PYP. Marrying the organisation of PYP units of inquiry, to an early childhood pedagogy based on an evolving curriculum and children's interests, sometimes created tension for teachers. E1 at A1 commented that the PYP units could be 'quite prescriptive':

I even mean things like having the freedom to, if the children have an interest, to be able to devote the whole time to that instead of thinking about, well we've got this unit of inquiry that needs to be begun, so we need to introduce that at some time, and sometimes my unit gets pushed aside a little bit while something else happens, it's just that feeling in the back of my mind, we have to do this... E1 (A1)

E2 at S1 had similar concerns:

These are going to be the concepts that drive [the inquiry]...how we're going to have this curriculum driven by these concepts plus stay true to what we want to do...without becoming too directed with what we're trying to do, without saying, "Well, let's talk about form...thinking about form", all the time, you know, how we do it kind of more naturally.

Several of the educators talked of developing strategies to work within units of inquiry while still being actively responsive to children's interests (group and individual). These included ongoing fine tuning of the focus of inquiry, dropping in and out of a unit of inquiry, or stretching it out over time. Overall there was a sense that the educators strongly valued inquiry-based learning, saw it as providing a valuable framework for teaching and learning, and as being in tune with their own pedagogical values. However, they also perceived challenges.

8.3 The Learner Profile Attributes

Educators referred to the Learner Profile Attributes, throughout their interviews. They related them to their examples of units of inquiry, as well as

their teaching philosophies and values, and in examples of children's learning and development within the programmes. Several of them emphasised that support for the Learner Profile Attributes was infused throughout their programmes, both in their formal planning and in spontaneously arising interactions and activities:

I guess the Learner Profile happens everyday and all the time. When we have a project like that –yes we have a couple of learner profiles we would like to focus on, but sometimes you don't feel that it is that specific. When you are with the children and you see something happening it may not be the Learner Profile that you planned for, but it is still happening. Sometimes it just takes you two minutes to say that "Hey I like the way you are caring, or so and so is being knowledgeable about this topic and so let's learn from it". E1 (S2)

...one of the main things that I've learned from PYP is the notion of risktaking and promoting that in children, and we are active everyday in promoting our risk taking, of children rolling down ramps and making billycars....the sawing and hammering.... E2 (A2)

E2 at S1 raised the question of how specific Learner Profile Attributes might appear in young children in an Early Years programme. The following discussion occurred in the interview:

E2 (S1) ...if you think about something like reflection... it's very high order thinking, and I'm not saying the children cannot do that, young children; I believe that young children can do anything, I really do. But at the same time there needs to be some kind of way that you bridge the gap between what they might do internally and how you're going to shine a lens on that thinking that they're doing, how you're going to say, "Okay, so this is what you're doing here; you're being reflective...I guess what I'm trying to say is that I'm trying to work out what reflective looks like at this age.

Interviewer: Yes, so do you think they are reflecting internally, but it's a difficult thing for them to, you to...to articulate and you to document in a way...?

E2 (S1) *Yeah, I think it's both. I mean if you look at a child who's constructing blocks, for instance, and you watch them over a number of days, and you watch how the block play is changing because they're gaining understanding about the way that blocks fit together and the stability of towers for instance. Right, they're being reflective, they have to be being reflective to do that. But for me to find a way to show them and talk to them, and have that conversation about what you're doing here is being reflective, has been something I haven't, I feel I haven't had a skill to do yet. Not that I feel that that's not possible, just, [laughs] and that's why I mean, the PYP to me seems so big and brilliantly big, but it is so big that you just can't do everything.*

8.4 Reggio Emilia and the PYP

While all four sites identified their programmes as inspired by the Reggio Emilia approach, only staff at S1, A1 and A2 discussed how they drew on Reggio Emilia principles and practices in their planning. Staff at these three sites were uniformly positive about what they saw as the value of the Reggio Emilia philosophy and approach, which was an approach they had experience with prior to working within a PYP programme:

I think what probably underpins everything that we do, or my belief, is the Reggio Emilia philosophy. So it's something I believe very strongly with and have been working with it for probably fifteen years now, and have had two visits to Reggio Emilia, so I think that's the basis of my thinking. And I guess that impacts on the way that we view the children, and how we work with the children, and then the other things build on top of that...

E1 (A1)

All interviewees at S1, A1 and A2 stated that they were able to effectively combine both a Reggio Emilia approach and the PYP in their programmes, emphasising that Reggio Emilia was also an inquiry based approach. There was a sense that the Reggio Emilia philosophy and approach both inspired and supported them in implementing their Early Years programmes, even helping to resolve some of the tensions that could arise between implementing units of inquiry and following children's emerging interests. For example, E1 at the A1 site, described how the Reggio Emilia approach helped her in dealing with what she saw as a degree of prescriptiveness in the PYP:

...so our PYP units, which I guess initially are quite prescriptive in what we need to do with the children, or what we're inquiring about, we can use our Reggio brains, if you like, in how we take that unit further...

Further on in this conversation, E1 at A1 also discussed how the PYP could provide a constructive framework in conjunction with a Reggio Emilia approach:

So I guess the PYP almost puts another layer on it, and if you think about it, in Reggio Emilia, they do have research questions that the teachers would begin with or any question that they'd begin with at the beginning of the year, so maybe PYP is our way of having that research and that beginning, that question. So that's just sort of how it can go together in another layer.

8.5 Working with Local Frameworks

Educators at both Australian sites are also required to work within the Australian (EYLF) and Victorian (VEYLDF) curriculum frameworks (Australian Government Department of Education, Employment and Workplace Relations for the Council of Australian Governments, 2009; State of Victoria (Department of Education and Early Childhood Development), 2011). Only E1 at A1 specifically talked about working towards these local frameworks within a PYP programme. Although she perceived alignments between the PYP and the VEYLDF, she also noted the challenges of simultaneously juggling the demands of both the PYP and the VEYLDF:

I guess the thing that we're facing with PYP and the introduction to the Framework is how they can work together, because I guess of the extra requirements of the documentation from the new Framework, as to how we can marry the documentation from the PYP units with that framework. So I guess that's just one thing to consider, and how the Framework can be reflected in the PYP? E1(A1)

E1 at A1 went on to say that she didn't see it as a 'big drama' working with the different frameworks and philosophies.

The Singapore Kindergarten Framework (Republic of Singapore, Ministry of Education, 2012) was not raised as a topic of discussion in any of the educator interviews in Singapore, either by interviewer or interviewees.

8.6 Play-based learning

While all the educators talked about the value of play and play-based learning, there were some variations in perspectives on the place of play in their programmes. E2 at S1, appeared to regard play as an integral part of the programme, and a context for supporting children's development of the Learner Profile Attributes (see interview excerpt above, where E2 discussed children demonstrating being 'reflective' in their block play). The Australian educators were the most vocal about what they saw as the benefits of play, and the role of play-based learning in their programmes. E2 at A1 commented that:

They're only little ones and they've really got to play and be children before they go to school.

E1 at A2 stated that:

I think play is what they need to be doing, and that is where their learning takes place. And you know whether or not it's unstructured or whether or not we put a provocation there, they're still playing.

Educators at A2 also discussed how they worked to inform parents about the value of play and play-based learning, including doing curriculum nights on play. They also reflected and researched on play as a team: "...part of that was our own research—how do we articulate what it means to us?".

Educators at S2 talked of play as being important for 'many learnings' (E2) and in particular for the learning of social skills (E1). However, educators at S2 also perceived a dichotomy between play and learning, and a tension around allocating time between them, that wasn't apparent at the other three sites. Educators at S2 described their programme as 'packed', so that play was squeezed into any time left over, or added as a specific teaching strategy where possible:

I think the programme here sometimes is quite packed during curriculum days that there is not enough time for them to actually you know free play. So what we try to do is integrate play and like games and things like that into the curriculum, so that they are playing as well as learning'
E1 (S2)

8.7 Academic learning and school readiness

Educators in the Australian preschools did not see it as their role to teach children formal literacy and numeracy skills. Nevertheless, they noted that parents could be concerned about their children learning basic academic skills, and were prepared to be responsive to that. E2 at A1 stated that:

If a parent came to me and said: "I'm really worried because such-and-such can't count to ten and it's really concerning me", then I would go, "Okay, we need to really work on doing that", and then I would make it a goal for the child simply because I know it would be important to the parent...

Educators in Singapore also noted parental concerns, and there were suggestions of some pressure from parents in relation to children's academic skills:

I guess sometimes the parents don't realise that if the child is not ready then the child is not ready. You can't force a child to learn to read if he is not ready. E1 (S2).

The Singapore educators discussed how they respected and responded to these concerns from parents:

...we work in an environment here with children with parents who are paying huge amounts of money, and they expect outcomes...what they come in and ask us for is "Tell us about reading, tell us about writing, tell us about maths", which is probably the same all over the world....because those are the ones that seem most important. E2 (S1)

Researchers were informed by educators at S1 that children entering the Singapore school system were expected to have basic reading or writing, or risk being placed in remedial classes on school entry. As a response to the

dynamics of this wider cultural context, S1 had instituted a half-hour reading session every morning, where children would select books and read with a partner, with teachers monitoring the progress of each child. E2 at S1 described this programme as a success in terms of children progressing with their reading in an organic fashion, avoiding formal structured lessons:

Often kids are really observant when they're reading and they'll notice, they'll read something and they won't know why it is like that, and they'll ask you about it and then maybe what I do is I bring that back to the group, I'd say, "Well, you know, he noticed the 'phone' was spelt with a 'ph' and we didn't really, couldn't really work that out." And then we'd have a conversation around that. So there's some elements of phonics in there, but not kind of, it wasn't something, we didn't sit around going, "This is 'a'," every day.

E1 at A1 also valued the integration of basic academic skills in a natural and organic fashion, rather than as formal structured lessons:

It's not our role to teach the children to read, and it's not our role to teach the children to write, but if a child shows a readiness for it, we will not formally teach them, but we'll provide opportunities for them to extend those skills further, and that's what we can do. And even with some children, I had one little boy two years ago who was reading chapter books by the end of the year, so we just provided those books and provided the materials for him. He couldn't write, but he could read, so just the opportunities for him to extend...

Educators themselves, particularly at S1, A1 and A2, were not concerned about the development of children's academic skills, and saw the children as 'capable' and well prepared to manage the transition to school. They were confident in the effectiveness of their programmes, including teaching and learning based on inquiry and play. They spoke of working towards informing and persuading parents towards their view. The Australian educators also noted that the expectations for children as they moved up into the Prep class (the first year of school in Victoria) within their school, were not about putting pressure on children for 'school readiness', but involved only very basic academic skills such as being able to count to ten, or recognise letters of the alphabet. Educators at all sites emphasised that prime objectives of their

programmes were for children to be happy, and to develop a love of learning, and inquiring attitudes.

It is interesting to consider the concerns of parents and the responses of educators around early academic learning and school readiness, in relation to the findings on children's performance on the assessments undertaken of their literacy, developmental school readiness, and learning skills. Children in all four programmes were found to be performing at equivalent or higher levels for age expectations on all three measures. These findings suggest that the play-based and inquiry-led approaches of three of the Early Years programmes were not disadvantaging children in their preparation for formal schooling. In particular, children in the four programmes were significantly more likely to show high levels of learning skills, the sort of skills that are crucial for school success (Bernard, Stephanou & Urbach, 2007).

8.8 Learning Environments and Child 'Ownership'

Educators at the Australian sites in particular, discussed their learning environments, both inside and outside, and how they reflected their teaching philosophies and approaches. Educators at both A1 and A2 sought to encourage children's sense of ownership and responsibility for the learning environment. This involved allowing children to make decisions about how the learning environment was organised, and what resources and materials were available. E2 at A1 spoke of how she went to take down a decorative feature involving two poles that had been hanging from the ceiling since the beginning of the year. The children objected, and E2 came to a compromise with them involving leaving up one of the poles:

But they weren't very happy with that. Like we had done it. I said to [E1] "We should have asked them first before we took it down"....we've got to remember it's their room.

At S1, E1 talked of how the school was a 'community'. One of the children's research projects involved children walking freely around the school, interviewing members of their 'community'.

The educator interviews indicated that the outdoor learning environment was seen as an integral part of the programme at S1, A1 and A2. Educators at A2

particularly, talked in detail of how their outdoor environment was integrated into their projects:

But I think that, talking about the environment and how it really supports the inquiry, because they know the resources are there to support that and there's that culture that developed of the environment supports inquiry learning. So because it's nesting, there's a lot of birds nesting around, they went out looking for nests... E1 (A2).

In contrast, educators at S2 did not see time in the outdoor learning environment as an integral part of the programme in the same way, but more something additional that was fitted in where there was time in the academic programme. E2 at S2 noted that “for [the children] going outside is a luxury”, explaining:

Because of the limited playtime we don't really have a fixed time for outdoors. So usually it's free play unless we...say “let's go out to take out some leaves and so sorting and stuff.

8.9 Relationships with Families

Educators at the Australian sites emphasised the important role of families in their programmes. They also spoke of the respect that they felt for families and their views (as did E2 at S1):

We have a really great relationship with our parents, so it's definitely one of the things we pride ourselves on here....we really appreciate their feedback and value their feedback and we are open all the time, so they can come in whenever they want and spend time here. So we definitely work with them rather than two separate entities (E2 at A2)

Educators at both A1 and A2 described how they communicated with parents, and kept them informed of what was happening in their programmes. They also stated that they valued parent input, and provided opportunities and encouraged parents to contribute, although parents did not always take this up: “...hoped in doing it [journal] this way that parents would actually have an input more into what we do and where we can go from here. But they tend not to, it's quite interesting” (E1 at A2). Educators at A1 and A2 also discussed how they tried to inform and ‘educate’ parents about their pedagogical approaches

and programme philosophy, and explain why, for example, they are not teaching formal literacy in their programmes:

And we talk a lot to families. We have an information night the year before they come, and then we have a curriculum night in the first few weeks....and in both of those we talk about the fact that you know literacy is all around...it's doing all of those pre-reading skills, all the time, we are doing the beginnings of literacy (E1 at A2)

8.10 Summary

Educators at all sites valued inquiry-based learning as a basis for their PYP Early Years programmes. There were some concerns raised, however, about the effects of what one educator called the 'prescriptiveness' of the units of inquiry within the PYP on educators' ability to develop curriculum and projects that were flexible and responsive to children's evolving interests. This was one area where educators saw the Reggio Emilia approach as having an advantage. Indeed, educators at S1, A1 and A2 strongly endorsed the Reggio Emilia approach (with which they were very familiar), and described how it complimented their PYP programmes. Only one educator (E1 at A1) specifically discussed a local curriculum framework (the VEYLDF). This educator felt that the PYP and VEYLDF worked well together, but raised the issue of having to meet two sets of requirements, such as in documentation. She wondered whether the PYP Early Years curriculum could 'reflect' the local framework and thus lighten the documentation load for educators.

Educators were confident that their programmes were effective in promoting children's learning and development. This included the role of play and play-based pedagogy in the programmes of S1, A1 and A2. Educators at these three sites were articulate and thoughtful in their rationales for their play-based pedagogy. In contrast, educators at S2, while valuing play, did not see it as integral to their academic programme. Opportunities for play activity were limited to breaks in the programme, or time left over from structured programme activities.

Educators faced some challenges around issues of teaching children basic academic skills and children's preparation for the transition to formal schooling. At the Australian sites, educators noted some concern from some parents

about teaching basic literacy and numeracy, and whether their individual children were ready for school. Educators in Singapore faced similar parental concerns, as well as pressures arising from expectations of children to be reading and writing on entry to mainstream Singapore schools. Educators described how they responded to these concerns by talking with parents about the pedagogical bases of their programmes, and where appropriate, by providing children with opportunities to develop basic academic skills, within the parameters of their programmes. At S1, this involved a formal half-hour reading session each day, implemented in response to parental concerns, but using what one educator described as an ‘organic’ and individualised approach.

Educators at S1, A1 and A2 emphasised the importance of children having ‘ownership’ of the programme and the learning environment, in line with PYP Early Years principles (IBO, 2013). They also described the significant role of outdoor learning environments in their programmes, particularly the educators at A2. Educators at the Australian sites also described the importance of relationships with families, and how they worked to involve them in their programmes.

9. PYP Coordinator Perspectives

While the educators working in the programs were interviewed to gain their insight and perspectives, it was also felt important to seek insight into the Early Years programmes from the perspectives of the program coordinators, who have leadership roles in the implementation of the programmes.

9.1 Interview procedures

Across the four sites leading educators in coordination roles were interviewed by a member of the research team. In S1, S2 and A1 this was the Early Years coordinator and in A2 it was the PYP coordinator. With the two Singapore sites this was undertaken via telephone interview and with the Australian sites this was a face-to-face interview. Each interview lasted approximately 45 minutes. The interviews focused on gaining their perspectives into what they saw as the outcomes for children in this age range and how the Early Years program from the PYP supported this, and how effectively they felt the goals

and the learning attributes were being met. Each interview was then transcribed and coded according to a number of themes.

9.2 Inquiry based learning

Each of the four coordinators saw the strengths of the program as coming from the inquiry based approach that underpins the PYP Early Years stage:

I think that the inquiry model of learning is very successful for young children' (S1); 'The inquiry approach has really supported the program very well' (S2); 'It is inquiry based, and it's not too prescriptive' (A1); 'It is about inquiry, it is about building confident learners and engaged communicators (A2).

It is interesting to note that while the coordinator at S2 felt that the inquiry approach was really supported in their Early Years program, the participant researcher notes that she felt this to be less supported at this site.

Two of the coordinators also felt that the PYP Early Years stage programme supported child centred learning in that is built from and engaged with children's interests as a starting point for the units of inquiry: *"the children's interests really do drive what you're looking at" (S1); 'we base them (the units of inquiry) on things that children are very naturally interested in" (A1).*

The inquiry approach was seen as supporting and enhancing children's learning and development as *'children have that responsibility of their own learning (and) ... are able to talk about their own learning. ... They bring a different level of confidence to their next environment'* (S1). Through the inquiry based approach the children are able to *'articulate with the kind of questions that they want to ask... they are more forward, you know, with their contributions and the ideas and all that'* (S2). The PYP Early Years stage was identified by the PYP coordinator at A1 as also building attributes for learning:

'The children are confident, assertive, they can make a decision, they can select and choose, they don't procrastinate They are ... 'confident, articulate, all those things I said before, assertive, capable ... they could make decisions' .

9.3 Learner Profile

The Learner Profile was discussed by each of the coordinators as key to the development and implementation of the PYP Early Years stage, and at the heart of the program (S1; A1). The Learner Profile was seen as instrumental in building positive outcomes for the children:

With the Learner Profiles, they have managed to see this very huge improvement in the children. You know, the way they speak and the way they work with their friends ... Children (are) displaying the attributes of the Learning Profiles and we are using the language of the learning profiles with them (S2).

When we're introducing the Learner Profile it's about just getting them used to the language, so using any part of, as part of our conversations in the classroom, such as "Oh, you've been such a risk taker today because you did this" (A1).

The level of engagement that's promoted with the adults and between the children through the Learner Profile, you know they actively, they actively promote the children being risk takers, being communicators (A2).

The PYP Early Years stage as supporting children in building a sense of community was highlighted strongly by the coordinator from A1. She saw this sense of community as supporting the children, especially those in the three year old programme to:

feel safe and secure... until they feel like they're part of the community, until they feel safe, until they, we're connected with them, until they, we're connected with them, until they're connected with others, you know, nothing else will happen. I think the PYP really reinforces that idea of community, working together, that collaborative learning which is something that we feel really strongly about.

9.4 Connections with the Reggio Emilia Approach

This sense of community features heavily in the pedagogical approaches taken from the philosophy of the preschool programs in Reggio Emilia, and the coordinators saw strong links between the Early Years Stage of the PYP and

the Reggio Emilia approach. Many of the positive aspects of the PYP Early Years stage such as the inquiry based learning, the sense of community and the engagement with families are also key to the philosophy underpinning the pedagogical approaches used in Reggio Emilia preschool programmes:

We take a lot of inspiration from Reggio ... It's a really seamless sort of connection between that sort of collaborative nature and dialogue out of Reggio Emilia and the PYP ... but done with thought around how (this) can offer support for inquiry learning for the children (S1)

I've been very influenced by the Reggio Emilia approach, which is very inquiry based and child-centred ... we have our morning meetings, so creating that culture of respect, which is very Reggio as well (A1).

While the other two sites also drew on the approach taken from Reggio Emilia, the coordinator from the second Singapore site (S2) felt that she needed to know more about this and how it connects with the PYP, feeling that perhaps some of the ways this approach had been used in the programme had been lost since becoming an IB school:

our programme is very much influenced by Reggio. I have yet to really figure out how connected IB and Reggio is. We want to find the connection and you know, how both can be joined together... when they were preparing the school for IB, I would say that we have actually put aside the Reggio approaches, for the IB. (I want to) find the best way to, without compromising either one, but I think it is not easy (S2).

The PYP coordinator at A2 also had some concerns with what she saw as the nexus between the PYP and the Reggio Emilia approach. While she considered the PYP Early Years stage fitted in well in many aspects with the Reggio Emilia approach, she also felt there to be tensions between the two:

They (the educators) look at what sort of things that they need their students to do without taking away from what the philosophies of the Reggio are, you know things like using documentation to make children's thinking visible and having the environment as a third teacher and, you know, the child, the image of the child as a powerful learner. One of the tensions (that) has always been is that the child being at the centre of learning (according to Reggio Emilia approach) and the documentation

for PYP is that the learner profile is at the centre and not necessarily the individual child (A2).

9.5 Engaging families

The study sought to gain an insight into how the coordinators viewed the role of families in their children's learning, and the involvement of families in the program. Participation by families is 'desired in the learning process, especially during the early years' (IBO, 2013). Relationships with families is also a strong emphasis of the Reggio Emilia approach. Previously the participant researcher had noted that she felt within the sites that relationships with families were regarded as important, and active family involvement in the programme was observed in action or through documentation, particularly at A1 and A2. However during the interview with the Early Years coordinator at A1, relationships the programme had with families were not discussed. This was also the case with the coordinator at S2, who related the role of parents to evaluating the programme and noted that at the time of the interview she had not included them as a source for feedback.

It was the coordinators at S1 and A2 who discussed the importance they hold for families in greatest detail. The Early Years coordinator from S1 stated that:

We invite parent participation as much as possible. We think about the possibilities for parents to be involved when we're doing our initial planning around units, we look at the resources and the people that we think might be able to offer something in our inquiries, so that might be parents that have specific talents, or coming to read stories in other languages, or cooking experiences and things like that. And of course they help out on the field trips that we plan for the children (S1).

At A2 parents and families are seen as having a significant role in the program:

They want to be involved but they don't just want to be involved outside the classroom, they want to be inside the classrooms, and they've got the opportunity to do that. In the Early Learning Centre they have everything from, you know, parents coming in and just working in the room with them each day, so there's often a parent in there, they don't just come in and cut up fruit and then go home they'll they, you know they'll come in, settle the children, and then a couple of them will stay on

for quite a few hours... They have their walk, their weekly walk, and they have grandparents, neighbours, you name it. You know if you come on a day when there's a walk there's a whole community that goes on the walk' (A2). At A2 they also have what is described as a 'visiting families programme' – 'The family might have something to share and so with the visiting families program they'll come in and then they might bring something traditional from their family or if they've got a different cultural things happening, they might bring things in and share it with the whole group so that's one way of really bringing them in.

The coordinator shared an anecdote about one child's grandfather who taught the children how to pick olives and put them in brine.

While the Coordinator at S1 believed that the parents were integral to the programme, she also felt that this needed to occur within parameters posed by the educators:

a lot of the time parents independently want to come in and do things in our class, and sometimes we have to very carefully consider whether that's authentic to the inquiry that's going on...we explain to them that we would like it to be authentic, that we're not into commercially produced materials and those kinds of things... I think parents kind of take liberties, that's a very strong way of putting it, but sometimes it's a bit above and beyond.

None of the coordinators interviewed discussed a role of parents in decision making regarding the units of inquiry. While each of the coordinators discussed the value of the building on children's interests in developing their programme, parents' ideas and understandings of their child's interests were apparently not sought.

9.6 Literacy and numeracy development

The inquiry approach through the units of work was seen as strongly supporting the children's literacy and numeracy development, and the children were seen as articulate in their use of oral language: *"The children are more articulate with the kind of questions that they want to ask"* (A1). The coordinator at A2 noted that she doesn't *"really ever see any children who come through the ELC into Prep that are not confident, articulate"*.

The PYP Early Years stage was seen particularly by the PYP coordinator from A2 as allowing for more authentic opportunities for literacy and numeracy development to be a focus:

all of their experiences are so experiential and real and because people are engaging with them on a daily basis their oral language I find is actually, you know I find the children quite articulate (A2).

The Early Years coordinator from S1 suggested that as a result of the PYP, “they’ve got a real love for what they’re learning about”. The PYP coordinator from A2 suggested that the pedagogies used in the PYP Early Years stage should be an approach used in other grade levels:

Language and number, it’s in their daily language, in fact we could learn from the Early Learning Centre in the classroom. We should be saying use the language of mathematics all the time in your daily language.

It is the implicit learning of literacy and numeracy that was seen as building authentic understanding:

they’ve got to find ways of recording things like, you know, who the monitors are for the week and how many people are allowed in the cubby and those sorts of things so you’ll find all those functional language things that’s just done as a matter of course (A2).

Mandarin is a core language taught in Singapore schools. The coordinator from S1 felt that the children transitioning into the Singapore schools needed to have more targeted Mandarin lessons in their final preschool year, with a specialist Mandarin teacher.

9.7 Issues and challenges

The Early Years and PYP coordinators interviewed overwhelmingly saw strengths and advantages in the PYP Early Years stage for children. However S2 had only recently gained accreditation as an IB school and so staff were still grappling in some aspects with the transition. There was a sense that with this school they were still trying to find the nexus between the academic expectations of Singapore parents and the IB approach:

(In) Singapore, we very much believe that children need some form of skills, learning, in order to get them ready for schools ... But other parents may not prescribe to an IB curriculum at first, because they may feel that the IB curriculum may not fully prepare their children for school, for the skills and learning that the children are supposed to have acquired, being a very academic'.

This pressure to meet academic expectations had also been noted by the researchers during their observations at the sites. The coordinator from S2 also felt that while the teachers who had been with the programme from the start were more able to take on board the PYP, *“very new teachers may be quite lost in the PYP”*. However she also noted that *“the teachers who are familiar with the programme are the ones who are coaching the newer ones”*.

9.8 Summary

All four coordinators valued inquiry-based learning. They saw the Learner Profile as key to their programmes, and as building positive outcomes for children. Educators at S1, A1 and A2 viewed Reggio Emilia approaches as aligned with the PYP, and the coordinators from S1 and A1 also took that perspective on the relationship between the two. The coordinator at S2 hesitated to make links between Reggio Emilia and the PYP, wanting to ‘know more’. She noted that at S2, they had ‘put aside’ Reggio Emilia approaches when moving to the PYP, and felt aligning the two would not necessarily be easy.

Like many of the educators, the coordinators at S1 and A1 had been strongly influenced by Reggio Emilia in their own practice. The coordinator at A2, on the other hand, saw some tensions between Reggio Emilia approaches and the PYP. In particular she saw the child as being at the centre of Reggio Emilia approaches, whereas for the PYP the Learner Profile was at the centre. This comment raises some interesting questions regarding Reggio Emilia approaches and early childhood education pedagogy in general, in relation to the PYP. It may be that many IB educators would envisage as their ideal an Early Years curriculum that is both child-centred *and* effective in supporting the Learner Profile. The researchers would argue that in fact three of the four programmes involved in this study have already effectively taken on the challenge of creating such a curriculum (S1, A1 and A2). It is also worth noting

that in their interviews, parents expressed appreciation for the child-centredness and individualisation of their children's Early Years programmes (see Chapter 11).

Only the coordinators at S1 and A2 discussed relationships with families, and their involvement in the programme, at any length. The coordinator at A2 in particular talked of how family involvement was important in all areas of their programme. The S1 coordinator also welcomed family involvement, but considered it needed to be within parameters and appropriate to programme goals.

The coordinators at S1, A1 and A2 all saw their programmes as supporting children's development of literacy and numeracy. The A2 coordinator also saw the 'authentic' literacy and numeracy practices in the PYP Early Years stage as valuable approaches for other grade levels at the school. Overall, the coordinators saw the PYP Early Years stage as having strengths and advantages. There were challenges however, articulated by the S2 coordinator, who noted the tensions between running an inquiry-based programme and meeting the academic expectations of parents and of the Singapore educational context. She also commented that teachers new to the PYP could 'get lost', and needed support.

In light of the positive outcomes on assessments of the children's literacy, school readiness and learning skills, it would be useful for the IBO to support Early Years and PYP coordinators in articulating for families the pedagogical rationale for the Early Years play-based and inquiry-led approach. Certainly the coordinators of these four programmes will be able to share the positive assessment outcomes from their own programmes.

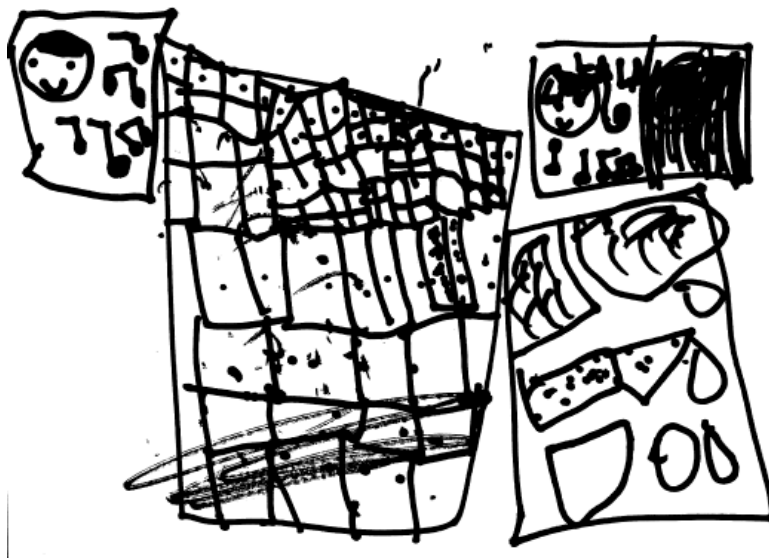
10 Children's Perspectives

One of the aims of the project was to gather data on children's perspectives on their Early Years programme. The researchers asked the educators in each programme to ask the children to express what they liked about their programme, and also what they had learnt, in drawings, paintings, writing, interviews, etc. Both S1 and S2 provided drawings and writing about children's responses to these questions. Unfortunately, we did not receive any thing from A1 or A2, possibly because of end-of-the-year demands on the staff.

10.1 Child perspectives at S1

There were 17 responses from children at S1, most in the form of a drawing with accompanying writing, usually an educator's transcription of what the child had said, but sometimes in the child's own handwriting (see photo 22). The responses indicated that the children had been asked to write and/or draw about what they liked about the programme, and what they had learnt. The responses were analysed according to what children 'liked' and what they had 'learnt'.

Photo 22. Drawing and writing from a child at S1 on "What I liked" and "What I learnt"



I learnt what to do with art,
that we all do really nice pieces
and that every one is really good
at it. We learnt about 'who we
are and what we can do.' and
'Sharing the Planet' and taking
care of the planet and trees. We
learnt about what's happening in
the countries when we read the
news.

Of the 17 responses, all but one identified at least one thing they *liked* about their Early Years programme, and all but two identified at least one thing they had *learnt* in the programme. For the 'like' responses, 7 children identified their graduation, which was an important event happening at the time. Interestingly, several children (4) also liked the singing involved in the graduation. Three children mentioned the exhibition, and two an excursion to Chinatown. Other likes identified included PE (physical education), drawing, meetings, Jackson Pollock (sic), making a cake, and private reading time.

Fifteen of the children described things they had learnt in the programme, with most of them identifying more than one thing. A few children talked about specific skills or content areas, such as learning how to jump, paint, sing or draw. Most of the responses however, focused on inquiry, knowledge acquisition, and self-awareness, and could be understood in relation to one or more of the Learner Profile Attributes. Below are some examples of children's statements about what they saw themselves as learning from their EY programme, with relatable Learner Profile Attributes in brackets:

...we learn more inquiry and to get answers (inquirers)

...how cars work (knowledgeable)

We share new things and share our ideas (communicators)

We learnt about who we are and what we can do (reflective), and 'Sharing the Planet' and taking care of the planet (caring)...learnt about what's happening in the countries when we read the news (knowledgeable)

We saved the planet by not wasting water and planting trees....(caring, thinkers)

...learnt how to show what we learnt (reflective)

I learnt how to bake. I learnt how to crack eggs properly. Learnt drawing and learnt to draw desert. I did not draw desert before (inquirers)

We were learning about structures, we know all the structures on the earth' (knowledgeable)

...learnt about painting (knowledgeable), learnt different people had different perspectives (open-minded). I learnt to write by practicing (risk-takers)

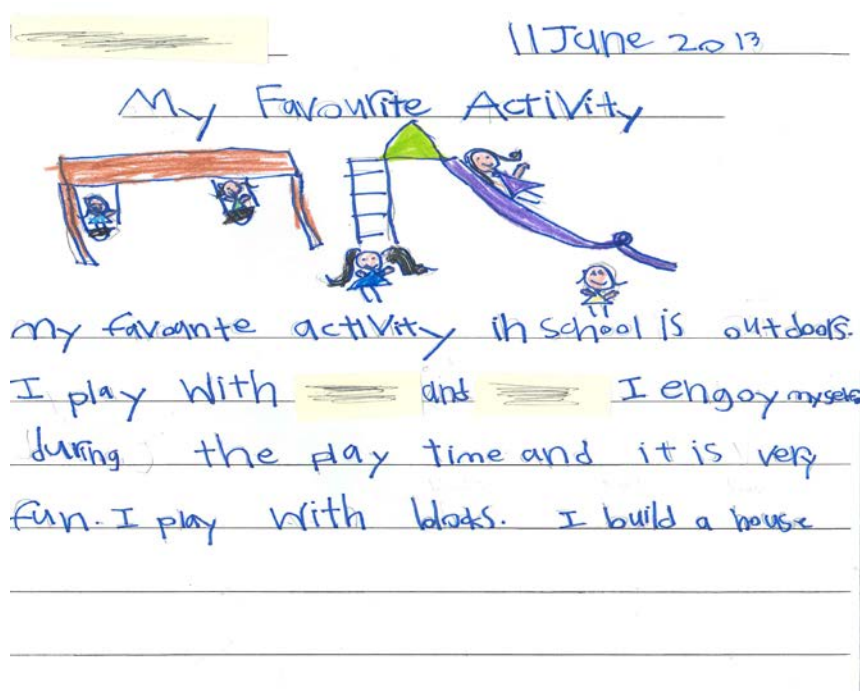
I loved the Exhibition and learnt not to be shy (risk-takers, reflective). I learnt to work hard and do science and art (knowledgeable, reflective)

In summary, the responses of the children at S1 indicate that they enjoy the learning activities in their programme, and that they are able to identify their own learning, both of specific knowledge and skills, and in terms of the IB Learner Profile Attributes.

10.2 Child perspectives at S2

There were responses from 11 children at S2, in the form of writing with an accompanying drawing (see Photo 23). The children seem to have been asked to respond to and continue a beginning phrase: 'My favourite activity in school is...'. The educators appeared to have transcribed children's responses in pencil, and children then wrote over the penciled words in texta pen. Unlike S1, the children do not appear to have been asked to talk about what they had learnt in the programme.

Photo 23. Drawing and writing from a child at S2 on 'My favourite activity at school is...'



All but one of the children identified play as their favourite activity at school. Four children identified the game of 'corners' as their favourite activity. This was presumably played outside, as researcher observations indicated that the indoor classroom at S2 was not set up in a way that would allow the sort of physical movement involved in the game. In addition, those identifying 'Corners' also mentioned other play involving pretence, such as pretending to be 'Powerpuff Girls' and fighting monsters, or 'Super Girls'. Four of the children specifically identified playtime outdoors as their favourite activity. Boys mentioned football and 'playing 'Star Wars''. One girl identified her favourite activity as 'Show and Tell', when 'I tell all my friends about how I love them'. All the children talked of being with their friends as an integral part of their favourite activity.

10.3 Summary

The nature of the responses of the children from S1 and S2 about their perspectives on their EY programme, differ quite markedly between the two programmes. Children at S1, in describing what they liked about their programme, focused very much on learning activities within the programme, with the favourite thing being activities associated with their Graduation and Exhibition. At S2, the favourite activity was play, outdoors at playtime with their friends. In regard to children's perspectives on what they had learnt from their EY programme, the responses of children at S1 reflected both the learning of specific knowledge and skills, but also Learner Profile Attributes, including learning how to be inquirers, knowledgeable, communicators, caring, open-minded, risk-takers and reflective. What was striking about the responses of the children at S1, was not only that they identified specific skills and knowledge they had acquired, but they also expressed a meta-awareness of their own development as learners.

Because they were apparently not asked to think about what that had learnt from their EY programme, it is understandable that the children at S2 did not talk about this. However, even though children at both sites were asked a similar question about 'what they liked most'/'their favourite activity', their responses of children at S2 were different from those of children at S1. Children at S1 talked about learning activities within the programme as what they liked most, while children at S2 talked about play with friends and the outdoors as their favourite activities.

With the small number of responses, and the lack of consistency in the manner of collecting data on children's perspectives across the two sites, it is not possible to draw definite conclusions about why there are these differences between S1 and S2. It is interesting to speculate, however, about whether it has something to do with the differences between the two programmes, particularly in relation to the role of play and the outdoors. At S1, play-based learning, and time outdoors were integrated into the programme. In contrast, researcher observations of the programme at S2 identified a 'work-play' divide in the programme, and that children had only limited opportunities to play and be outside. Could it be that the children at S2 identified learning as 'work', and therefore not a pleasurable 'favourite activity' like play? If so, this would reflect the prevailing views of parents in many Asian cultures, who also perceive a 'work-play divide' (Fung & Cheng, 2010). On the other hand, if play and being outdoors are integrated into the learning programme at S1, does this mean that children there are having their desires for such activities met within the programme, and are therefore able to focus on their *learning* as a pleasurable and rewarding activity?

Finally, the responses from the children at S1 indicate that the programme there is indeed supporting the children's acquisition of Learner Profile Attributes. Children's responses reflected an awareness of their own learning, and their own development towards the Learner Profile Attributes. The responses from the children at S2, while not focused on their learning, did indicate that their friendships were important to them, and that they had positive relationships with other children. They also suggested that these children had good skills in organizing their own play.

11. Family Perspectives

11.1 Interview procedures

As part of the study, the researchers were interested in the perspectives of parents and families on the PYP Early Years programmes that their children attended. These perspectives were elicited via semi-structured interviews that explored the following 'starter' questions:

- How do you see your relationship with the Early Years programme at the school?

- Do you consider that the programme supports your child's learning and development? In what ways? Can you give examples?
- What is your view of the indoor and outdoor environments of the Early Years programme?

The response in the Singaporean sites were not as strong as desired with a total of 5 interviews completed across S1 (2 interviews) and S2 (3 interviews). These interviews were conducted face-to-face by a member of the research team based in Singapore and took on average 15-20 minutes to complete.

The response from the Australian sites was stronger with a total of 12 interviews completed from A1 and A2 (6 interviews from each site). Learning from the Singaporean data collection experience, these interviews were conducted over the phone for practicality and convenience, particularly for busy families. The Australian family interviews were completed by another member of the research team based in Melbourne and took about 10-15 minutes each.

It must also be noted that there were some differences in the interview protocol between the Singaporean and Australian sites. The Singaporean interviews were more open-ended and posed slightly different questions. Despite these differences a number of overarching themes emerged across the interviews from all sites. The interviews were transcribed and then coded according to emerging themes.

11.2 Socio-Emotional & Life Skills Development

One of the key themes that arose from the family interviews across the sites was an emphasis on the development of socio-emotional and broader life skills in their children. This ranges from confidence building, cultivating self-expression and the development of specific characteristics such as perseverance, respect and risk-taking.

A parent from A2 said this about the PYP Early Years stage:

I think it's given them the best possible start to their education because it gives them so much confidence in who they are and having their own ideas and how to express themselves and go along a train of thought.

A parent from S1 noted the importance of understanding multiple perspectives and respecting diversity:

She has grown so much, she is learning all the ways, she is respecting, you know, others...and then also the nationalities, she understand that the difference if he thinks the one way, and then she has [been] able to understand that it is okay if you don't think in my way.

Another parent from S1 highlights relational aspects:

I think the whole social awareness and interaction with his friends, teachers, for people around him, having the confidence and the ability to have some good conversations using some of the knowledge that he's picking up from different aspects.

A parent from S2 also touches on relational aspects:

What I also feel is that Early Years also allow a child to build the bond with the children, so learning in a group is the kind of thing that gets inculcated.

A parent from A1 specifically mentioned the IB aspect of the Early Years programme:

[...] it's the whole person. I think something, particularly for last year, one of the things was risk taking and our daughter last year was very shy. She wouldn't even really talk to anybody for the first 15 or 20 minutes. She would keep to herself and taking risks and having little ... going to the toilet, she'd do a toilet risk where she'd go to the toilet at the same time as somebody else instead of waiting for everybody to leave the room and then go by herself and no one would be in the same room. Just really building on the whole person. I think the International Baccalaureate covers those things, which are super important because if they can't be confident to function in a room it doesn't really matter about some of those other things.

It is evident that the development of socio-emotional skills and wider life skills are important to parents and families and key outcomes that they look for in Early Years programmess.

11.3 Individualised Learning

For families across the sites, the individualised, more child-centered learning is highlighted as important and often a reason for their choice in the school or program. Parents across the centres explained some of the strengths offered by individualised programs that incorporate children's interests:

There's an appreciation of the fact the children develop differently, so one size fits all doesn't apply with the kids and that's quite key (S2).

I wanted him to be part of the program which gave him the, which was not very pre-mandated, which was open-ended and which gave him the opportunity to explore (S1).

...the interests of the children; and they do that with all the different I think it definitely works to what your child's interests are. They really put a big effort into ensuring that each child learns within a group but individually as well... The motion group... that started because they were interested in riding their bikes and someone talked about how they'd been for a bike-ride with their family on the weekend and so it's all turned into this, they are learning from what their interests are. So they take what the children are interested in and developing the programs within what they need to do, but definitely interests (A2).

I particularly like their project work and the way that they will focus on a project with small groups and then that project will go on for maybe six months, if it takes six months, four months if it takes four months. And it's just a small group and they go back and investigate that project and then they document it and then kids are part of the documentation. So they're given cameras. They can draw or they can video. They can do whatever they like, however way they want to document it. I really like that. They're part of their learning and they kind of basically dictate what they want to learn and how they want to learn it, which I think is the most important thing at this age (A2).

A striking example of how one centre's individualised program, child-centred program impacted a family with twin boys:

...we've got the twins, Jake and Sean, and they're very different boys with very different interests. One of the things I really like about the program is that it does seem to me to be very individualised and they take the time to find out what each child's interest is and then nurtures and fosters that. So Jake, for example, has become really interested in photography. So they let him use the camera and then they made a pretend photo studio and he took every child's photo and the teachers called him the expert in photography. Then when they said, "Look, it's time for the other kids to have a turn with the camera as well, they said, "If you don't know how to use it and you've got any questions go and ask Jake." So he felt confidence and everything around that. It's just blossomed. Whereas, Sean is really into Lego and blocks and building and things like that. In the same way, they've really encouraged that and used that as a way to teach him other things. So I think the individualisation of the program is one of the things that I'm most happy with (A1).

Although families have acknowledged the benefits of following children's interests, they also consider how the PYP Early Years stage also extends the children beyond their comfort zones. A parent from A1 explained:

...both [teachers] have developed interests that [my son] didn't have at the start of the year [...] They started in his comfort zone and now have developed other areas. So now he loves painting, whereas you know, at the start of the year, he wouldn't go anywhere near the paint. So he's just, I can't even describe how many things he's developed, like, it's just amazing.

A number of other families had noted the transformations in their children with various special needs (eg on the Autism spectrum) that individualised programs supported. Overall feedback from parents included how individualised programs following children's interests were age appropriate, particularly in the early years to nurture a love for learning. Families also appreciated the flexibility, openness, and time to engage in projects more individualised approaches afforded. One parent aptly stated, *'I think the quest of learning is a very important part that early education should not kill that desire to learn'* (S2).

11.4 Family Engagement

Interestingly, while in the coordinator interviews some Early Years coordinators did not explicitly raise engagement with families in great length, it was an aspect highlighted by families. The importance of partnership and sense of community is more striking in the Australian sites, particularly so in A2:

[The Early Years programme] is very community focused. I would say it's a very healthy relationship between the teaching staff and students and the parents and families; not just the parents, with the whole family, with the siblings as well...for grandparents and cousins and all sorts of things.

[The programme] engages the family as well as the children... They're included with everything. Everyone knows the door's always open, so we can go in at any time and participate, whether it's cutting up fruit, or just being in the classroom reading a book, or doing play dough.

I think that if you didn't have the same level of community and dedication from the families who are willing to participate at the extent that they do, I don't think that the programme would be as successful. I don't think it would, I think it makes it what it is to have that relationship between families and the staff and the students.

Family involvement and participation was also observed by researchers during the school visits. A number of parents also commented on how the PYP Early Years stage has helped in their learning as well:

[...] it's been so rewarding being part of the programme and I think as a parent, as I said, it's probably helped me the most of any books or anything that I tried to learn about being a parent, actually being involved with them and the Reggio Emilia philosophies and what they've actually taught me about being a parent, about helping the children thrive and flourish is something I'll cherish forever.

In the Singaporean interviews the relationship between families and educators or the learning centre seemed to differ somewhat. While there was a sense of partnership, this work does not seem to overlap in the classroom space as described in A2, rather there is a more distinct albeit connected notion of

programme environment and home environment. A parent from S1 explained how they perceived their role in their child's education:

I would say the role of us [is] encouraging. So it's a lot of encouragement to [our child] to help him sort of build on whatever he is, all these [IB] attributes that you just mentioned, to be able to bring that alive in the home environment, be it in simple tasks of sharing, be it in communication, be it in just exploring on a day-to-day basis, either routine or non-routine stuff that he's doing. And the learning continues into the home environment.

There also seems to be a different kind of expectation of the relationship between families and educators in the Singaporean sites, particularly in S2. One parent described her surprise in having educators willing to work in partnership, as opposed to separately:

This year I find it, to be honest, quite different in terms of ... this is one of the first schools that I have seen that they take this ownership for the child to develop. So when we talk to them the dialogue is more about "We are doing this, can you help us?" A lot of other schools would say ... [...] So there the feedback is "Please do something about it," not that "Can you help us?" kind of thing. This year I find it very different. They are doing on their own and they are saying, "If you support it, we can do it even better." So there's this ownership which I really love about this place. In fact, I'm actually getting my daughter also into school.

Some parents may be more wary of partnering or collaborating with teachers and question potential implications. Another parent in S2 explained:

Maybe because this is Asia. Asian parents, including myself, we will try to tread on a fine line of, we have always this nagging thought that if we express ourselves too [candidly] the teacher may not look [upon] my child favourably. It may not be true, but it's just the Asian thinking. We tend to hold back, whereas some parents pull no punches. This is not right. I probably stop somewhere halfway.

Cultural differences in the conception or understanding of parental relationships with teachers could be a factor here (Dimmock & Walker, 2000). However, it must be noted that these views may not be representative of the

broader views of parents in these sites as only a few interviews were completed in the Singaporean sites, therefore it is difficult to draw conclusive comparisons.

11.5 School Readiness & External Expectations

Broadly speaking, most of the parents interviewed across the sites felt that their child was better prepared for primary school having undertaken the Early Years Stage of the PYP. School readiness includes socio-emotional development as discussed in an earlier section. A parent from S1 also noted:

I was looking for... where I can see that my child is having a lot of taking the responsibility. So she is, yeah, responsible, which is very important, she's learning the thinking, the decision making, and so she is learning to agree and think about her choices, what [are] the consequences. So this I was really looking for that age before they go to the primary [years].

Literacy development was also a subject parents raised across the sites. A number of parents admitted to a degree of anxiety and concern but also discussed trusting the programs they enrolled their children in:

I did have a concern about [no explicit focus on literacy] at the start. But I, sort of, eased up, and so yeah, you know, that'll come. (A1)

And I think we need to be very patient to say, "Okay, yes, you can't write." You can't keep pushing because then it takes the fun away. So you have to be quite clear as parents to say "I've put [my child] in [the] PYP [programme] for a reason." And then we make sure that he gets the best out of it and then we get the best out of it. Let's not try and muddle things up by saying "Oh, you're not able to write" and then push him down that track and take that time of exploring and discovery away. Yes, you can always supplement the learning by some home schooling. But we need to make sure that the process of inquiry remains the same. Otherwise the child gets very confused. I tried that initially, being a traditional mum in terms of getting him to write ABC and getting him to do spelling and all that. I realised it was ...[...] Like I said, you know, I learnt my lesson. Being a traditional, coming from a traditional education system, it's a little bit of a leap of faith actually. So initially I was worried.

And I realised I was confusing him. So I decided to step back. And I decided to let him take charge of his own learning process [...] (S1)

This type of internal debate or tension also reflects the external expectations placed on children entering primary schools. The burden of external expectations weighs heavier upon the Singaporean sites due to a highly performative culture in education (Fung & Cheng, 2012). A number of local Singaporean parents raised concerns about particular literacy and numeracy skills that would be expected of their children:

Yes, I'm a bit concerned whether he will not be able to match up to other local kids who are very prepared academically because this school is supposed to focus more attention and efforts on the basic, like the character building, the fun bits of learning That's my concern, especially Chinese [language] particularly in this school. (S2)

In selecting more 'alternative' early year programs, parents expressed some concern in the potential consequences of their choices. However, by the same token there were also parents who questioned the performative culture and question what schools have become:

To be honest, I've spoken to a lot of my friends and wondered is the school an assessment place where the child is going every day to get a feedback to say that your child is good at this and your child is good at that. And have the schools become just that or have the schools actually taken on that role of actually teaching and taking the responsibility for that. I need to get this child educated [...] Here [in this centre] I get that feeling. (S2)

11.6 What is an 'IB School'?

The overall feedback from families regarding the Early Years programmes with the PYP components was positive. A number of families, across both national settings, described stories of transformation and growth on the part of their children. Some parents specifically noted the role of the IB programme in the strength of the Early Years programme, for example:

...the International Baccalaureate is a great tool as well. I think that's been an excellent foundation for all of those things that I've said. Yeah, I

think it's really, really great. It gives that direction of how to go about things. I think that makes a massive difference. Obviously execution is important too but you've got to know what you're trying to achieve and if what you're trying to achieve is great then ... I've looked at it and it's the whole person. (A1)

While there was generally positive feedback from the families that came out of the interviews, there were also some questions that were raised. One particular parent indicated some concern with the 'openness' of the programme and broached the issue of standardisation and teacher quality across IB schools. The parent explained:

Yeah, I'm not sure, I would be wary of condoning [the IB programme]. The IB programme is, from what I understand, it leaves a lot open. Right, to the staff, to the teachers. There's a lot of creative freedom in how you impart and the concepts you're supposed to impart. So a lot of this depends on the school and the quality of teachers that they hire. For this reason I would, you know, I would also sort of, if she [my daughter] gets in to, say, an IB school, if I choose an IB school then I would be very wary because there's no standard curriculum. Right, and then there are advantages and disadvantages of that and how the teaching staff imparts whatever it is supposed to impart, right? So yeah, I would be, the lack of standardisation, I would be a bit concerned about. (S2)

11.7 Summary

Overall, parents were very positive about the Early Years programmes that their children attended. They particularly appreciated the individualised approaches of the programmes, and described how their own children had benefited from these approaches. They generally expressed trust that the programmes would prepare their children for school and to meet academic expectations, although there were some concerns expressed by Singapore parents about their children meeting academic expectations associated with the Singapore cultural context in regard to starting school. While the Singapore context does raise particular concerns in relation to academic expectations for young children entering the Singapore school system, the findings on assessments of children's literacy, school readiness and learning skills indicate

that the parents trust that their children's Early Years programmes will adequately prepare them for school are well-founded.

Parents highlighted the importance for them of the relationships and engagement between families and centres, although the nature of those relationships differed between the Australian and Singapore sites. The importance of family involvement was most strongly articulated by the Australian families, particularly those whose children attended the programme at A2. This involvement was active and actually included parents' presence within the classrooms and programme activities.

In Singapore, the relationship between families and centres was framed more as a connection between the programme and the home environment. A couple of the Singapore parents also talked of cultural factors that traditionally did not encourage active partnerships and collaboration between parents and educators, and may even lead parents to hold back from expressing their views to teaching staff. In regard to the programmes as IB programmes, parents were generally very positive, and identified unique benefits for their children from participating in an IB programme. One Singapore parent did however raise concerns about the 'openness' of IB programmes, and what they saw as the lack of a 'standard' curriculum.

12. The Early Years Programmes and National Frameworks

There is an expectation in both Singapore and Australia that early childhood educators will align their programmes with national learning and quality frameworks. For the Australian sites in Melbourne, the most relevant framework is the state-based Victorian Early Years Learning and Development Framework (VEYLDF) (State of Victoria 2011b).

The VEYLDF in turn is aligned with, and derives from, the national *Early Years Learning Framework (EYLF)* (Australian Government, 2009). In Singapore the national framework is called *Nurturing Early Learners: A Framework for a Kindergarten Curriculum in Singapore (NEL)* (Republic of Singapore, 2012).

12.1 The Australian sites and the VEYLDF

The VEYLDF provides a common framework and a common language to guide early childhood educational practice in Victoria. It is strongly influenced by sociocultural and ecological perspectives on children's development and learning, emphasising the importance of family and community contexts. It identifies five *Learning and Development Outcomes* for children:

- Children have a strong sense of identity
- Children are connected with and contribute to their world
- Children have a strong sense of wellbeing
- Children are confident and involved learners
- Children are effective communicators

The VEYLDF identifies pedagogy as integrated within the following eight Practice Principles:

1. Family-centred practice
2. Partnerships with professionals
3. High expectations for every child
4. Equity and diversity
5. Respectful relationships and responsive engagement
6. Integrated teaching and learning approaches
7. Assessment for learning and development

Researcher observations and interview transcripts indicated that the Early Years programmes A1 and A2 were working effectively to meet the requirements of the VEYLDF. Those Australian educators who discussed the local frameworks in interviews reported being able to meet the VEYLDF requirements while working within the PYP. Evidence for children's achievement of the five Learning and Development Outcomes were documented in the researcher observations, and indicated in the results of the literacy, school readiness and learning skills assessments.

The Early Years programmes at A1 and A2 demonstrated alignment with the Practice Principles of the VEYLDF. There was evidence of strong relationships with families, and opportunities provided for their active involvement in the programmes. Early Years staff in both programmes worked together as a team, collaborating effectively with primary level staff in their schools and assisting children's smooth transition into Prep. The play-based and inquiry-led

pedagogy of the Early Years programmes reflected curricula that challenged and supported children. They aligned with both PYP principles and those of the VEYLDF, including Practice Principles 3, 4, 5, 6 and 7. Educators in these programmes also demonstrated reflective practice (Practice Principle 8), evident in programme documentation, and in their interviews with researchers.

12.2 The Singapore sites and the NEL

The Ministry of Education has recently introduced the NEL as a national curriculum framework for guiding early childhood programmes (Republic of Singapore, 2012). The framework draws on the *Developmentally Appropriate Practice* model as practised in the United States (Ng, 2014), with an emphasis on the unique characteristics and opportunities for learning found in the early childhood period. One of the goals of the framework is the introduction of a more play-based pedagogy in Singapore preschools: '...a broadening endorsement of play as an optimum learning instrument to develop creativity, thinking, language, independence, social interactions and problem-solving skills' (Ng, 2014, p. 11). The NEL states clearly that early years education is important in itself, not just as a preparation for formal academic learning:

Early years education has been perceived by some as a preparation for primary school. However, it is not just a preparation for the next stage. It is vitally important in itself. It should not be confused with trying to accelerate learning in the kindergarten years by providing children with a simplified primary school curriculum. (Republic of Singapore, 2012, p. 11)

The Singapore framework is based on six principles for quality practice, identified as critical features of a quality kindergarten programme (p. 14). They are:

- A holistic approach to development and learning
- Integrated learning
- Children as active learners
- Adults as interested supporters in learning
- Interactive learning
- Play as a medium for learning

Based on these principles, the NEL also provides guidance for practice in *Practices 1-6*, which include guidelines on basing the curriculum on children's observed learning and interests, organising the learning environment, and creating a positive climate for learning.

One of the Singapore preschools (S1) appeared to be implementing its Early Years programme in a way that aligned with the principles of the NEL. The researcher observations all yielded evidence of what would be regarded as quality practice under the national framework. However, while the second Singapore preschool (S2) appeared to be effective as a school-type academic programme, it is not clear to the researchers whether the S2 programme was aligned with all guidelines of the Singapore framework, such as in areas relating to *Principle 6 Learning through play*, or *Practice 3 Preparing the learning environment*. For example, having children sitting on benches with the teacher out the front conducting lessons appeared to be a regular practice at S2. Under Practice 3, the Singapore framework document states that:

The physical layout determines the type of learning that is going to take place. For example, the arrangement of tables and chairs with a teacher seated at the front of the room will probably result in teacher-directed and table-bound activities where children are passive and wait to be told what to do (Republic of Singapore, 2012, p. 30).

In at least some respects therefore, the programme at S2 did not appear to be completely aligned with all the principles and practices outlined in the Singapore framework. In this respect, it may be symptomatic of a wider issue in the Singapore context. Ng (2014) describes how early years teachers in Singapore experience tensions between following the guidelines of the new framework, and their own views and those of parents on the purpose of early years education. She notes how research has shown that both teachers and parents in Singapore see the purpose of early years education as preparation for formal schooling, with parents requesting structured academic work for their children, such as work sheets.

Many Singapore parents also see play as about relaxation and pleasure, and as separate from work and learning (Fung & Cheng, 2012; Ng, 2014). Ng's own study of Singapore early years classrooms showed similar pedagogical practices and classroom timetabling and organisation to that observed in S2.

Despite the training of educators, traditional Singaporean cultural attitudes towards academic learning appear to be still a dominant countervailing influence in the implementation of the NEL.

It needs to be remembered that researchers spent only two days at observing the Early Years programme in S2, in what they were told was a 'revision' period. Nevertheless, the researchers recommend that S2 confirms that their Early Years programme is meeting local framework requirements.

13. Conclusions and Recommendations

Findings from this study showed that three of the participating preschools (one of the Singapore preschools and the two in Australia) were implementing inquiry-led and play-based PYP Early Years programmes that appeared to effectively support children's development of Learner Profile Attributes. Evidence for this came from researcher observations and interviews with educators, coordinators and parents. Evidence also came from children's perspectives on their programme at one of the Singapore preschools, where children were able to identify their own progress in regard to the Learner Profile. This evidence from children was intriguing, and suggests that further research on children's perspectives on their experience of the Early Years stage of the PYP could be illuminating.

While implementing an apparently effective academic-based programme, the second Singapore preschool (S2) appeared to be struggling with some aspects of implementing a PYP programme, and observations and interviews indicated that they would benefit from further professional development and support in their transition from a formal academic model to an inquiry-led and play-based programme. These findings argue for monitoring to ensure that new PYP Early Years programmes in particular are provided with the necessary professional development and support to enable them to align with essential PYP principles and practices. This monitoring and support should be sensitive and responsive to any specific challenges arising from the cultural context in which a programme operates.

All four programmes are achieving good outcomes in terms of children's literacy, developmental school readiness, and learning skills, and overall

children were achieving at levels equivalent to or higher than their peers on these measures. There were some differences between preschools in these areas. Compared to the Australian programmes, children in the Singapore preschools achieved at higher levels in literacy and school readiness, with the S2 programme having the highest literacy outcomes and S1 highest average scores and narrowest spread of scores on the *Who am I*.

While some of these differences will be at least partly attributable to age, with children in Singapore being older than those in Australia, there were also indications of programme effects. Both Singapore preschools included formal literacy activities within their programmes, in response to pressures arising from the Singapore context. Indeed, the programme at S2 was perceived by researchers as structured around formal academic activities in literacy and numeracy, similar to a school classroom. S1 had a different approach to the teaching of literacy. While there was a formal reading period each day, other literacy activities were integrated into the play and inquiry activities that made up the rest of the programme. While the approaches differed in S1 and S2, both programmes included literacy and numeracy activity which may have played a part in their higher outcomes on measures of literacy and school readiness. The Australian preschools, on the other hand, did not see the teaching of formal academic skills as being part of their role, in line with the general viewpoint of preschool educators in Australia, and also reflective perhaps of the younger age of the Australian preschool children.

All four programmes appeared to benefit children in their development of learning skills using the ACER SEW, with outcomes in this area significantly better than a comparative 'All Schools' sample. Children from the two Australian programmes showed the highest composite scores on this measure. This was an interesting finding in light of the fact that children in the Australian programmes were younger than those in Singapore, and also younger than the Prep-Year 1 age group that the survey was designed for (ACER, 2013). It suggests that the play-based and inquiry-led approach used in the A1 and A2 Early Years programmes is strongly supportive of the development of learning skills in preschool-aged children (4-5 years) in the Australian context.

Researcher observations and interview transcripts indicated that the Early Years programmes in the Australian preschools were working effectively to meet requirements of local frameworks, in particular the local state framework the VEYLDF (State of Victoria, 2011). Those Australian educators who discussed working within the VEYLDF in interviews reported being able to meet the framework requirements while working within the Early Years stage of the PYP. One educator did raise the issue of extra demands on staff having to provide two sets of documentation, and wondered if it was possible to 'marry' the documentation to meet two sets of requirements. The IBO may want to consider if there are ways of streamlining reporting and documenting requirements of staff, to avoid double loading of requirements under the PYP and local frameworks, where possible and appropriate.

One of the Singapore preschools (S1) appeared to be implementing its Early Years programme in a way that would effectively meet requirements of the national Singapore learning framework the NEL (Republic of Singapore, 2012). As noted in previous chapters, the second Singapore preschool (S2) appeared to be effective as a school-type academic programme. On the other hand, the S2 programme did not appear to be completely aligned with all the principles and practices outlined in the Singapore framework, particularly in the areas of play-based learning and organisation and structure of the learning environment. It needs to be remembered that researchers spent only two days at the preschool, in what they were told was a 'revision' period. Nevertheless, the researchers recommend that S2 confirms that their Early Years programme is meeting local framework requirements.

The researchers observed many examples of sustained shared thinking between children and educators in the programmes at S1, A1 and A2. Sustained shared thinking has been identified as an indicator of quality in early childhood programmes (Siraj-Blatchford et al., 2002). There was a sense of a strong *intellectual* focus that underlay the inquiry-led and play-based approaches in these three programmes. This is interesting in light of early findings from the *E4Kids* project showing that Australian kindergarten and childcare programmes scored well on measures of supporting children's emotional development, but were not as strong in their support for the development of children's conceptual understanding, thinking and language (Tayler, 2012). Research on processes and outcomes to support children's

thinking and learning in IB Early Years preschools as compared to mainstream early childhood programmes in Australia and elsewhere, could make a useful contribution to understanding what makes early childhood programmes effective in supporting children's intellectual development, and whether the IB PYP has advantages in this respect.

Many of the educators at the preschools had experience of working with Reggio Emilia in their teaching careers, and spoke positively of it. Several of them described how using Reggio Emilia approaches helped them in implementing their PYP Early Years programmes. Some of the educators also spoke of the tensions that could sometimes arise between what they saw as expectations around completing PYP units of inquiry, and more flexible approaches to following children's evolving interests, such as happens in Reggio Emilia and other early childhood curriculum approaches. This issue can be seen as part of a challenge for the IB PYP: How to develop an Early Years programme that reflects the essential principles and practices of the PYP, while also being uniquely *early childhood* in focus, and responsive to the strengths, interests and needs of young children. The researchers feel it is important for the IBO to continue to avoid an automatic 'top-down' imposition of primary stage requirements of the PYP onto Early Years programmes. In the staff surveys, one of the educators made the following comment:

As a school who facilitates an inquiry, play based curriculum we find that the IB PYP is in direct alignment with our beliefs. It would be wonderful if the IB could articulate more clearly the early years as this specific time for learning can be 'lost' within the documents. Four units of inquiry work well for the 3-5 year olds. Again it would be advantageous if the 5-6 year olds only had four units.

The researchers were impressed with the general level of articulation and critical reflection on the part of participating educators and coordinators in the study, and feel that the early childhood professionals working in Early Years programmes are making substantial contributions towards developing the identity of the PYP Early Years curriculum. Parents at all four preschools demonstrated some concerns around their children's acquisition of what they perceived as important basic academic skills, in preparation for entry to school. This concern was heightened in the Singapore context, where children are expected to demonstrate basic literacy and numeracy skills on school entry.

Educators responded to these concerns by articulating the rationale for their teaching approaches, providing parents with information about how children learn, and engaging in specific teaching of basic literacy and numeracy in a way appropriate to their programmes. These responses appeared to be effective, both in producing positive outcomes for children's literacy, school readiness and development of learning skills, and in creating trust on the part of parents that their children's Early Years programmes would adequately prepare their children for their educational futures.

In light of some of the issues and challenges identified here by educators, coordinators and parents, the IBO may want to consider how to support their schools and communities in addressing the tensions that can exist between the philosophy and principles underlying the PYP Early Years stage and concerns of parents, as well as conflicting demands and expectations of children that can arise in specific social and cultural contexts. There can be concerns for parents generally about the effectiveness of inquiry-led, play-based approaches in preparing their children for school, especially in cultures where there has not been a strong tradition of play-based pedagogy (Fung & Chang, 2012). Longitudinal follow-up research on academic outcomes for children who have attended PYP Early Years preschools could inform programmes, and assist in addressing some of these concerns.

It has been noted that during the recruitment process researchers found that in the State of Victoria, PYP Early Years programmes appeared to exist only within private schools. On the other hand, there are an increasing number of government primary schools in Australia that are offering the PYP (Hill, 2006). The IBO may like to consider whether it may be feasible to offer PYP Early Years programmes outside of private schools, in community based preschools and childcare centres. This could be particularly appropriate for those preschool centres that 'feed' into local government primary schools that offer the PYP.

There were limitations to this research. A higher number of child participants would have strengthened the findings from the standardised measures. The researchers had also hoped for a more diverse range of Australian centres to be recruited for the study. Classroom observation times were also limited, particularly at the Singapore sites. However, the mixed-method Mosaic approach did appear to be an effective strategy to study the four Early Years

programmes. The different perspectives appeared complimentary to each other in building a coherent 'picture' of the individual programmes and their contexts. The use of standardized assessment measures alone would have presented a limited picture of processes and outcomes in the four programmes. The qualitative data from the researcher observations and stakeholder interviews provided a more in-depth view of how three of the programmes in particular used inquiry based approaches to support children's progress in the Learner Profile. The interviews also identified stakeholders' views of the programmes' achievements and challenges.

Recommendations

- That the IBO ensure that new Early Years programmes in particular receive sufficient professional development and support in transitioning to the PYP, and in meeting IB and local framework requirements.
- Continue working with staff and early childhood education experts, to develop and clarify the PYP Early Years stage principles and practices. This should include consideration of local contexts and requirements.
- Investigate ways of minimising avoidable doubling up of administrative and reporting requirements in regard to the PYP and local regulations and frameworks.
- Look at ways of supporting Early Years staff in addressing parent concerns around early academic skills and school readiness. This could include the commissioning of research and dissemination of findings (see following recommendation).
- The following areas of research could be valuable: longitudinal follow-up research on academic outcomes of children attending Early Years programmes; comparative studies of processes and outcomes in IB Early Years and non-IB preschool programmes; comparative studies of processes and outcomes between different IB Early Years programmes; research on children's perspectives of their Early Years programmes, particularly in regard to their awareness of their own progress towards the Learner Profile.

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