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UNIVERSITY OF SOUTHAMPTON

FACULTY OF HEALTH SCIENCES

Volume 1 of 1

Enhancing knowledge and attitudes towards play and  
the play environment among Thai nursery workers

by

Sompratthana Sudjainark

Thesis for the degree of Doctor of Philosophy

July 2013



UNIVERSITY OF SOUTHAMPTON

## ABSTRACT

FACULTY OF HEALTH SCIENCES

Thesis for the degree of Doctor of Philosophy

### ENHANCING KNOWLEDGE AND ATTITUDES TOWARDS PLAY AND THE PLAY ENVIRONMENT AMONG THAI NURSERY WORKERS

Sompratthana Sudjainark

With the increased number of childcare centres in Thailand, the role of nursery workers has become pivotal to promoting optimal child development. The importance of learning through play is generally not recognised as an important factor in promoting child growth by nursery workers in Thailand.

This aim of this study was to enhance the knowledge and attitudes of Thai nursery workers towards play and the play environment by using a multimedia teaching package (MMTP). Based on a pragmatic paradigm using mixed methods approach, this study was broken down into two phases: 1) the design of the MMTP based on a content analysis of UK and Thai curricula for training Thai nursery workers, and 2) evaluating the effectiveness of the MMTP by comparing knowledge and attitudes among three sample groups of Thai nursery workers.

Three sample groups consisted of a total of 226 Thai nursery workers: 1) those who received the MMTP training, 2) those who received no training and 3) those who only received official government training.

Data collection was conducted over three periods: before training, immediately after training and four weeks after training. Nursery workers from the first group, who had received the MMTP training, were found to have a significant improvement in knowledge and attitudes towards the importance of play and the play environment immediately after training. The improvements increased even further after four weeks. On the other hand, there were no comparable changes in the other two groups (those who did not have any training or had only official government training).

Five weeks after training, semi-structured interviews were carried out with eight participants from the first sample group. These provided insights into lessons learned from three main areas: 1) participating in the MMTP training, 2) applying the MMTP to work at childcare centres and 3) barriers that occurred as a result of using the MMTP.

The findings indicated that the MMTP had a positive effect on the knowledge and attitudes of Thai nursery workers towards the importance of play and the play environment as a means to promote child development. It was concluded that using the MMTP training package to train all nursery workers in Thailand may improve knowledge and attitudes towards play and the play environment and would have the potential to enhance child development in the future.



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## List of Accompanying Materials

DVD: The Multimedia Teaching Package



# DECLARATION OF AUTHORSHIP

I, Sompratthana Sudjainark

declare that the thesis entitled

Enhancing knowledge and attitudes towards play and the play environment  
among Thai nursery workers

and the work presented in the thesis are both my own, and have been  
generated by me as the result of my own original research. I confirm that:

- this work was done wholly or mainly while in candidature for a research degree at this University;
- where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
- where I have consulted the published work of others, this is always clearly attributed;
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- I have acknowledged all main sources of help;
- where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
- none of this work has been published before submission.

Signed: .....

Date:.....



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# Definitions and Abbreviations

## Abbreviations

BTEC	Business and Technology Education Council
CACHE	Council for Awards in Care, Health and Education
CPD	Continuous Professional Development
CSDH	Commission on Social Determinants of Health
DfES	Curriculum set out by the Department for Children, Schools and Families
DLA	Department of Local Administration
ECCE	Early Childhood Care and Education
ECD:	Early Child Development
EYFS	Early Years Foundation Stage
GLH	Guided Learning Hours
IOC	Index of Congruence
MCQs	Multiple choice questions
MMTP	Multimedia Teaching Package
NVQs	National Vocational Qualifications
PAOs	Provincial Administrative Organisations
SAOs:	Sub-District Administrative Organisations
SPECIAL	Social, Physical, Emotional, Creative, Intellectual, Autonomous and Language development
SPICE	Social, Physical, Intellectual, Creative and Emotional development
UK	United Kingdom
UNESCO	United Nations Educational, Scientific and Cultural Organisation
VRQs	Vocationally Related Qualifications
WHO	World Health Organisation



# Chapter 1: Introduction

The main purpose of this chapter is to discuss the backgrounds that demonstrate the significance of the importance of play and the play environment and nursery workers to promote child development. The chapter will also explore theories in play and child development, childcare centres and Thai policy.

In order to achieve these purposes, the chapter is divided into four sections: background, the background to the study, the problem statement and an overview of the thesis.

## 1.1 Background

From my ten-year experience as a paediatric nursing instructor in Boromarajonani College of Nursing, Nakorn Lampang in Thailand, I have found that a number of Thai children do not reach their developmental potential due to a lack of appropriate stimulation. This issue stems from a number of reasons, such as nursery workers with limited training and inadequate materials, equipment and budgets. In many childcare centres, the play environment and the equipment used for stimulating child development are often found to be unsuitable and insufficient. It can be inferred that children who are raised in such environments would be hindered in development.

This concern has significantly increased in the last decade, as children are now likely to spend more time with nursery workers than they do with their own family members. Traditionally, children were taken care of during the day by their mother at home, while the father went out to earn income for the family, but nowadays both parents tend to work and thus rely on childcare centres to look after their children.

Consequently, it is not surprising that there is a focus on the quality of childcare and its influence on child development. According to the Department of Health and the Ministry of Public Health, the most efficient strategy for improving the quality of childcare centres is to emphasise the importance of early childhood to reaching full development potential, by **promoting children's growth and development through** service provision (Office of the Education Council Ministry of Education of Royal Thai Government 2008; The Department of Health 2009; Gangale 2012).

In Thailand in particular, where children typically spend nearly nine hours a day at childcare centres (from 7am-4pm), it is crucial that they are provided with a proper play environment in order to encourage learning through play. Nursery workers can then work on all aspects of child development.

This researcher strongly believes that the outcomes of providing a highly effective instructional training package to nursery workers will influence the quality of young **children's development, making it more likely that they will be able to provide the kind of manpower that the nation requires and therefore serve the needs of the governmental sector.**

## 1.2 Background to the Study

Children in both developing and developed countries are at risk of poor health and developmental outcomes across their lifespans (Kendall et al. 2009). Grantham-McGregor et al. (2007) estimated that over 200 million children in developing countries fail to reach their development potential in sensory-motor, social-emotional and cognitive-language development, because of poverty, malnutrition, poor health and inadequate early stimulation of care in their first five years of life.

Walker et al. (2007) pointed out that the risk factors for impaired child development under the conditions of poverty identified can be separated into two categories: biological and psychosocial risks, excluding genetic factors. Biological risks can include malnutrition, low birth weight and stunting, iodine and iron deficiencies, low immunity, environmental contamination (lead, arsenic, and pesticides in-utero) and infectious diseases (HIV and malaria). Psychosocial risks can be clustered into inadequate parenting factors and contextual risk factors (maternal depression and violence exposure).

According to Engle et al. (2007), the most effective early child development interventions can provide direct learning experiences for younger, disadvantaged children and families; these experiences should be of adequate duration, intensity and quality, including integration with health and nutrition services. Providing educational systems and services directly to the children, as well as including an active parenting and skill-building component, is a more effective strategy than providing information alone.

### 1.2.1 Child Development

Child development can be described as a process in which every child acquires the skills that they typically need in the areas of social, emotional, intellectual, speech and language and physical development, including fine and gross motor skills, during predictable time periods (Thyssen 2003; Berk 2009; Bornstein et al. 2012). The first few years of life are especially important, as that is when vital development occurs in all these domains (Grantham-McGregor et al. 2007).

The risk factors for developmental problems are both genetic and environment-related (Anderson et al. 2003). Children are at genetic risk if they are born with a genetic error such as Down syndrome, or a chromosomal abnormality such as a physical or mental disorder. Environmental risk results from exposure to harmful agents, either before or after birth, which can include physical-psycho-social factors and life experiences such as poor maternal nutrition, exposure to toxins or infections during pregnancy or after birth, prematurity, poverty, maternal depression, poor nutrition, accidents or lack of care.

Many studies showed that the crucial factors for high-quality child development are education, economics, and early stimulation (Anderson et al. 2003; Mo-suwan et al. 2004). Therefore, the decrease of these effective factors in early child development should be considered.

### 1.2.1.1 Early Brain Development

Fontaine et al. (2006) claim that the first five years of life constitute a critical period, vital for proper brain development. As the brain is developing rapidly at this stage, it is the most important period for establishing a basis for enhanced quality of life (Mustard 2010). This age constitutes a turning point, with children increasing their memory skills and creative thinking regardless of their economic status. It provides the opportunity to develop intelligence quotients (IQ), emotional quotients (EQ), moral quotients (MQ) and social quotients (SQ) (Kanchanachitra et al. 2008).

A healthy upbringing is the foundation for physical, mental, intellectual, emotional and **social development**. According to Bronfenbrenner's Ecological Model Theory of Human Development (2001), a child's environmental conditions, such as home, nursery, community and surroundings, play an important role in their learning, and impact directly or indirectly on their development (Vickerius & Sandberg 2006). The first three years of life are particularly important; during this time, the number of synaptic **connections in a young child's brain doubles to approximately 1,000 trillion, many more than will ultimately be present in the adult brain** (Berk 2009). This is in response to environmental stimuli and sensory experiences absorbed by the infant, which in turn enables further development and learning (IIlig 1998; Halfon et al. 2001; Anderson et al. 2003; Eloff & de Wet 2009).

### 1.2.1.2 Child Development Theories

Local variations in childcare theories and practices make it difficult to draw direct comparisons between staff:child ratios and quality across different countries. However, most of the relevant empirical research into childcare has been conducted in the US. While there are clearly some differences between early-years sectors in the US and UK,

there are also important similarities. Both are heavily influenced by the same underlying philosophy (attachment theory) and both have a burgeoning private sector.

Early-years services in the US and the UK both have a structure of staffing based on a split system. Consequently, findings from US research are often relevant to the situation faced by early-years providers in the UK. In contrast, early-years research and practice in mainland Europe is often based on different philosophies, which are more relevant to countries with integrated services and little or no private provision (Munton et al. 2002).

An understanding of child development is essential, as it allows us fully to appreciate the cognitive, emotional, physical, social and educational growth that children experience from birth to early adulthood. Theorists and researchers have proposed many child development theories. Table 1.1 illustrates an outline of the developmental stages of children, following the growth milestones that occur.

Theories	Theorists	Description
Psychoanalytic Child Development Theories	Sigmund Freud (Psychosexual development)	<p>The importance of childhood events and experiences, but almost exclusively focused on mental disorders rather than normal functioning.</p> <p>According to Freud, child development can be described as a series of 'psychosexual stages.' In <i>'Three Essays on Sexuality'</i> (1915), Freud outlined these stages as oral, anal, phallic, latent and genital. Each stage involves the satisfaction of a libidinal desire and can later play a role in adult personality. If a child does not successfully complete a stage, Freud suggests that he or she will develop a fixation that will later influence adult personality and behaviour.</p>
	Erik Erikson (Psychosocial development)	<p>A stage theory of development, but this theory encompasses human growth throughout the entire human lifespan. Erikson believed that each stage of development was focused towards overcoming a conflict. For example, the primary conflict during the adolescent period involves establishing a sense of personal identity. Success or failure in dealing with the conflicts at each stage can impact overall functioning. During the adolescent stage, for example, failure to develop an identity results in role confusion.</p>
Cognitive Child Development Theories	Jean Piaget	<p>Children think differently from adults, and so Piaget proposed a stage theory of cognitive development. He was the first to note that children play an active role when gaining knowledge of the world. According to his theory, children can be thought of as</p>

Theories	Theorists	Description
		<b>'little scientists'</b> who actively construct their knowledge and understanding of the world.
Behavioural Child Development Theories	John B. Watson, Ivan Pavlov and B. F. Skinner	Behavioural theories of child development focus on how environmental interaction influences behaviour and are based upon the theories of scholars such as John B. Watson, Ivan Pavlov and B. F. Skinner. These theories deal only with observable behaviours. Development is considered a reaction to rewards, punishments, stimuli and reinforcement. This theory differs considerably from other child development theories because it gives no consideration to internal thoughts or feelings. Instead, it focuses purely on how experience shapes who we are.
Social Child Development Theories	John Bowlby (Attachment theory)	There is a great deal of research on the social development of children. John Bowlby proposed one of the earliest theories of social development. He believed that early relationships with caregivers play a major role in child development and continue to influence social relationships throughout life.
	Albert Bandura (Social learning theory)	This is a theory of child development in which children learn new behaviours from observing other people. In contrast to behavioural theories, Bandura believed that external reinforcement was not the only way that people learned new things. Instead, intrinsic reinforcements such as a sense of pride, satisfaction and accomplishment could also lead to learning. By observing the actions of others, including parents and peers, children develop new skills and acquire new information.
	Lev Vygotsky (Sociocultural theory)	A seminal learning theory that has gone on to become very influential, especially in the field of education. Like Piaget, Vygotsky believed that children learn actively and through hands-on experiences. Parents, caregivers, peers and the culture at large were responsible for the development of higher order functions.

Table 1.1: The Outline of Child Developmental Theories (From DoCS 2006 and Berk 2009)

**It is believed that intelligence is an aspect of a person's** adaptation to their childhood environment. Adaptation involves intellectual striving to establish a state of equilibrium between self and surroundings (Piaget 1999). One example of the **importance of the environment of care can be seen in Ainsworth's test** (1978). When

this test was carried out, the result illustrated how a mother can be physically present but '**emotionally distant**'. A child in this situation is quite likely to be insecure in his or her attachment, and hence subject to maternal deprivation. Each attachment style is based on a specific pattern of emotionality (Ainsworth 1978). As emphasised by Bowlby (1991), **attachment relationships can influence a child's exploratory activities**, providing emotional regulation during exploration and organising and interpreting novel and curious information.

### 1.2.1.3 Child Development Delay

It is estimated that over 200 million children in developing countries fail to reach their full developmental potential (Grantham-McGregor et al. 2007; CSDH 2008), especially in the spheres of sensory-motor, social-emotional and cognitive-language development (Grantham-McGregor et al. 2007), as well as attentional and social regulation, literacy and numeracy, and subsequent learning (CSDH 2008). This is believed to be the result of poverty, malnutrition, poor health and inadequate early **stimulation of care during children's first five years of life**.

According to Nelson et al. (2009), if a child lacks attention or developmental support from adults, a situation of abandonment is created which, as a result, closes the window of opportunity for growth and development during the preschool period. In addition, poor early development affects physical and mental health, behaviour and learning in the later stages of life (Mustard 2010). The lagging development of children **can be explained through Chugani et al's (2001) model**. This study revealed that in poor environments such as Romanian orphanages, where children are cared for in large groups, brain development may become delayed during the formative period after birth, resulting in a lack of cognitive and social functioning (Kaler & Freeman 1994; Nelson et al. 2009). Moreover, the lack of challenging stimuli and stable attachments may impair the intellectual development of institutionalised children (Cassibba et al. 2000).

### 1.2.1.4 Child Development Delay in Thailand

Literature reviews on early child development in Thailand from 1990 to 2007 have shown that children aged under six years old often experience delayed development. A study by Mo-suwan et al. (2000) revealed that 10% of children under five showed signs of delayed cognitive development, with three to six year olds showing the highest prevalence. Similar research was conducted by Isaranurug et al. (2003), which demonstrated that 21.6% of children aged one to three years and 46.7% of children aged three to six years suffered from delayed development, particularly in the language domain.

Additionally, the annual report of the Thai Department of Health from 1999 to 2004 indicated that only 60-70% of young children aged under six years showed normal development, especially in the fine motor, gross motor and social domains. Interestingly, language development decreased from 86.30% to 83.90% during these years. Overall, child development decreased from 71.7% in 1999 to 67.7% in 2007 (The Department of Health 2009).

### 1.2.1.5 Childcare Centres in Thailand

Childcare centres have become an essential component of life in our society. Quality childcare can make a significant difference to children's development. For many years, researchers have been examining aspects of childcare that have a positive influence on children's development (Bosch & Jacobs 1998). In Thailand, like many other countries, the childcare centre has become a part of the new family lifestyle, where parents rely on childcare to look after their children for up to 35 hours a week.

According to Mo-suwan et al. (2004) and Chotsuwan (2007), the Thai way of life has changed in the last decade, as the incidence of families with two working parents has significantly increased. Previously, mothers would normally stay at home taking care of the children; they are still traditionally considered the primary caregivers even though they have some help from their families (grandparents, siblings, etc.). This attitudes is especially prominent in rural areas. In urban areas, meanwhile, both mothers and fathers are now taking jobs in order to bring in more income (Roa & Sun 2010), and so women in these areas, especially informal workers, have to rely on alternative caregivers when they go to work outside. Unsurprisingly, this has directly impacted the way that many Thai children are looked after and brought up. As a result of this new living pattern, both public and private childcare centres (which are expected to provide food and nutrition, healthcare and some basic education) have become an increasingly popular choice for modern Thai families (Ministry of Finance 2004; Roa & Sun 2010).

In 1999, the Thai childcare decentralisation act was promulgated; as a result, all **childcare centres** were brought under the local and elected control of Sub-District Administrative Organisations (SAOs) (Ministry of Finance 2004; Theptien & Trakulwong 2007; Sueluerm et al. 2008). Isaranurug et al. (2007) asserted that the incomplete transference of childcare centres from their original organisations to the SAOs may have affected their long-term development. This study included a survey conducted between November 2006 and February 2007, in five provinces from all five regions of Thailand (Prae, Nakhon Sawan, Suphanburi, Nakhon Pathom and Thrang). It was found that Provincial Administrative Organisations (PAOs) generally took responsibility for childcare centres, rather than the Department for Community Development. However, in the northeast part of Thailand, the centres were originated by the Department of

Religious Affairs, and in Chonburi they were set up by the Department for Community Development and the National Office for Elementary Education. The PAOs did also set up their own childcare centres, mostly in Suphanburi (20.1%) and Nakhon Sawan (15.4%) (Isaranurug et al. 2007).

The general operation of childcare centres works as follows: the head of the childcare centre acts as the administrator and liaises with a committee from the local community. Other nursery workers are in charge of supervising and caring for children. Children aged from two to six years are accepted. Children under two, physically and mentally disabled children and children from outside the catchment area might be accepted on a case-by-case basis (Jindadath 2003).

School-aged children receive far more attention in policies and programmes than preschoolers do (Haddad 2008). SAOs have limited resources and little interest in developing an Early Childhood Care and Education (ECCE) programme (UNESCO 2006).

Many problems and obstacles have been found in childcare centres in Thailand, including lack of knowledge about child development, lack of educational equipment, inadequate budgets and inadequate facilities (Voramongkol 2007; Sueluerm et al. 2008). Isaranurug et al. (2007) examined 30 childcare centres and found that although there were sufficient toys and equipment, 40% of the centres were in an unsafe condition. Additionally, there was a lack of trained personnel in the centres. Maleeles (2008) also found problems with childcare centres in the south of Thailand, such as limited space and playgroups/play equipment that were insufficient or unsuitable for **child development**. Yimgratok's (2007) study suggested various measures to alleviate this problem, such as providing training, more equipment, materials and funding for childcare centres. As the centres have a responsibility for encouraging child development, minimum standards should be set and monitored (Mo-suwan et al. 2000). Increased financial support from SAOs and cooperation between parents, communities and hospitals would also be successful strategies for enhancing child development in these centres (Aekphong 2008). It is clear that the quality of Thai childcare centres still needs to be improved.

An evaluation of the support system in childcare centres by the Local Administrative Organisation in 2008 showed that the average ratio of childcare providers to children was 1:20 (Chompikul et al. 2008), in accordance with the standard (which for children three years and older is one childcare provider for every 20-25 children). However, childcare providers had many roles such as cooking, cleaning and administration in addition to their primary duty of caring for children.

Concordantly, Sueluerm et al. (2008) also found that the ratio of caregivers to children was 1:20. Caregivers were particularly keen to receive sustained personal development

and secure benefits from their work. Therefore, it was considered that every childcare centre should employ at least one professional with a bachelor's degree, who could play an important role in child development (Chompikul et al. 2008). Although the number of childcare providers appeared to be sufficient for children, most of the toys and equipment were still unsafe. Similar results were found by Isaranurug et al. (2007) among the 30 child development centres that they studied: as mentioned above, there were sufficient toys and equipment, but 40% of these were in unsafe condition.

On 22<sup>nd</sup> May 2007, the Thai Council of Ministers gave approval to a long-term policy and strategy for early childhood care and development (i.e. for the 0-5 age group) that would take place from 2007-2016; this would play an integral part in the physical, intellectual, emotional, mental, social and ethical domains of early childhood development and provide a framework for action on the issue. It also assigned all ministries and agencies with the joint responsibility of translating the policy into effective implementation that would give concrete results, thus developing Thai children into high-quality citizens in order to help the nation in the future (Office of the Education Council Ministry of Education of Royal Thai Government 2008). This was an important milestone, as it was the first time in Thailand's history that a policy and strategy was prepared for the special benefit of early childhood development.

#### 1.2.1.6 Early Childhood Educational Development in Thailand

The Commission on Social Determinants of Health (CSDH), established by WHO, identified early child development as a priority issue (Maggi et al. 2005). The early childhood period is considered to be the most important phase of overall development throughout the lifespan (Irwin et al. 2007). This is because, as described above, children of this age undergo a rapid growth in brain development that is highly sensitive to and influenced by their external environment (WHO 2009).

Healthy early child development includes the physical, social/emotional and language/cognitive domains of development, each equally important. Therefore, a child's experiences in his/her early years are critical for developmental trajectory and life course (Irwin et al. 2007). Because children who become healthy adults can be expected to make a positive contribution to society, both socially and economically, social gradients in children's development affect the health and wellbeing of entire populations (Maggi et al. 2005).

UNESCO defines the term 'Early Childhood' as the period of a child's life from birth to eight years old (UNESCO 2010). It recognises the need for an integration of care and education for children in this age group. There are three development stages: under three, aged three to five and early primary (Haddad 2008). In Thailand, the Early Childhood Care and Development (ECCD) programme is concerned with children aged

five years and under (UNESCO 2006). The Department of Curriculum and Instruction **Development in the Ministry of Education developed and issued the ‘Curriculum and Guidelines for Pre-Primary Education’ in 1997 for the** first two age groups (under three and aged three to five) (UNESCO 2006; Office of the Education Council Ministry of Education of Royal Thai Government 2008).

By 1997, the constitution of Thailand stipulated the rights and liberties of Thai citizens to receive free basic education for the duration of not less than twelve years (see Table 1.2) (Office of the Education Council Ministry of Education of Royal Thai Government 2008).

Age	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Grade						1	2	3	4	5	6	7	8	9	10	11	12
Level	ECCE					Primary						Lower Secondary			Upper Secondary		
Access	Voluntary					Compulsory								Voluntary			
Cost	Free																

Table 1.2: Education System Overview in Thailand (UNESCO 2011)

The targets of early childhood care and education are children under six years old. There are three types of pre-primary education depending on the local conditions: preschool classes (one year prior to Grade 1 in primary schools), kindergarten (two to three-year-old children) and childcare centres (children aged two to five years) (UNESCO 2011; UNESCO Bangkok n.d.-b).

Private schools usually offer a three-year kindergarten programme. Two-year kindergarten programmes and one-year preschool classes are available at public primary schools in rural areas (UNESCO Bangkok n.d.-b). Preschool education is not compulsory, but became free in 2009 after the introduction of a 15-year free education policy which recognised the importance of education for this age group. The **government’s policy on preschool education has a clear direction to expand and** improve the provision of this education by state schools in rural areas on a nationwide scale, in order to provide better education opportunities to economically disadvantaged children in these areas (UNESCO 2011).

Kindergarten and preschool classes are mostly organised by the Ministry of Education, as well as some other public and private foundations. The childcare centres are organised by Sub-District Administrative Organisations (SAOs) and under the supervision of the Department of Local Administration (DLA) of the Ministry of Interior throughout the country (UNESCO 2006; UNESCO 2011).

Education is mainly financed by the national budget although Local Administration Organisations (LAOs) are encouraged to mobilise local resources for education.

However, greater reliance on local areas to fund education (fiscal decentralisation) poses the danger of contributing to greater regional inequality, given the greatly diverse fiscal capacities of different regions. In practice, this policy has yet to be effectively implemented (UNESCO 2011).

According to the Ministry of Education (The Office of the Education Council 2003), strategy planning for child development from age three to five is a main goal for the next decade. However, the operational practice of this policy seems to be unsuccessful due to a lack of quality and efficiency. The main problems are a lack of monitoring plans, a lack of continuous quality control of the standard government system in order to ensure both the quality and the quantity of childcare service, and lastly inadequate service systems for preschool children in both the management and administration domains. **This could imply that the Ministry of Education's model has raised barriers to preschool child development in Thailand.**

The 10-Year Plan and Policy for Early Childhood Development (2006-2015) was formulated by the office of the Education Council in cooperation with relevant public and private agencies. The main goal of this plan and policy is to give priority to three main strategies: (1) to support early childhood development; (2) to support parents and other stakeholders; and (3) to promote an environment that facilitates early childhood development (Office of the Education Council Ministry of Education of Royal Thai Government 2008; Roa & Sun 2010)

In Thailand, theories and principles of childrearing and early childhood education are mostly adopted from the west. In the past, play and pre-kindergarten readiness activities have not been an integral part of pre-kindergarten school practice. The traditional belief in Thailand was that pre-kindergarten schools should devote their energies to schoolwork and prepare children for primary schooling (Khemmani 1994). Despite this tradition, the Thai government has recently encouraged more play and pre-kindergarten readiness activities in schools for young children as part of formal government policy.

#### 1.2.1.7 Thai Policy

Since Thailand announced the Decentralisation Act, which was implemented in 1999, the majority of childcare centres have been managed by Sub-District Administrative Organisations (SAOs), as mentioned above. These are locally elected and under the supervision of the Department of Local Administration (DLA) of the Ministry of Interior (Theptien & Trakulwong 2007).

The Decentralisation Act benefits society in terms of distributing risk and state control; however, in practice, the assigned Sub-District may not manage the childcare centres properly for the following reasons:

1. The child development committee and personnel in the SAOs are unskilled. According to Tednoy (2002), almost all administrative committee personnel within the SAOs are only educated to secondary school level. Similarly, Kuptusthein et al. (2001) found that members of the SAOs had no direct educational qualifications or experience in child development.
2. Leesmidt (2003) and Phumphuang (2007) illustrated that SAOs have a wide range of roles and responsibilities relating to healthcare provision and that childcare centres are their lowest priority. Chompikul et al. (2008) revealed that the Thai government focuses strongly on general healthcare but ignores the importance of child development. Each SAO has responsibility for at least three childcare centres, with only an average distribution budget of 904 Baht (about £15) per head per month (Isaranurug et al. 2007), which is insufficient to **support each child. In fact, the SAOs' financial statements show that more** money was spent on construction, purchasing and hiring than on training nursery workers to reach their full potential (Leesmidt 2003).
3. The lack of cooperation between governmental department services and different organisations is also considered a critical concern. The public health division in Thailand has not yet been established in most of the SAOs (Leesmidt 2003).
4. The scarcity of reliable data is also a critical problem. Information from health surveys, management reports, progression reports and other documentation is insufficient due to missing, incomplete or non-correlated data. Therefore, readily usable data is still scarce (Leesmidt 2003; Chompikul et al. 2008).

In conclusion, the problem with the decentralisation of education administration is the unpreparedness of educational management systems, evidenced by examples such as insufficient knowledge of personnel and inexperience in the management of formal education (Kanchanon 2003). Kantitharangkul et al. (2002) show that SAOs do not manage childcare centres effectively due to a lack of resources and funds needed to provide high-quality early childhood education, play equipment and other teaching aids.

## 1.2.2 Play

### 1.2.2.1 Play and Child Development

Play is an **important and instinctive part of children's nature**, aiding all aspects of child development. Through play, children learn about the world around them; it is,

therefore, **vital** to understand how valuable play **is to** child development. Because modern life has led to a **reduction in free play opportunities, creating an 'optimal developmental milieu'** should be actively encouraged (Ginsburg et al. 2007).

Access to high-quality play, the presence of a suitable attachment figure and the creation of a supportive play environment can result in tangible development such as children taking responsibility for their own learning through play. Children should have a variety of play choices, flexibility in the use of free time and space and an open-plan classroom, and should be able to explore concrete materials in order to enhance their natural curiosity and social, emotional, physical, cognitive and intellectual development (Bosch & Jacobs 1998).

Much recent research has highlighted the connection between play in learning and early development (Thyssen 2003; Golinkoff et al. 2006; Ginsburg et al. 2007; Hirsch-Pasek & Golinkoff 2008; Schnoebelen & Smith 2008). Other researchers have concentrated on the role of play in specific domains of child development, the benefits or positive outcomes that children acquire from engaging in this activity (Marjanović Umek & Lesnik Musek 2001; Thyssen 2003; Verenikina et al. 2003; Ilgaz & Aksu-Koc 2005; Toth et al. 2006; Ginsburg et al. 2007; Vig 2007; Wyman et al. 2009) and how its nature varies across cultures in response to specific constraints and different degrees of encouragement (Parmar et al. 2004).

Vickerius and Sandberg (2006) illuminate the significance of play as social interplay which should be fun, and as a way that children and adults can appreciate and learn from each other. In addition, play encourages children to explore, imagine, create and solve problems in a way that comes naturally to them (Bruce 2005; Moyle 2005). It is believed that when children freely engage in play, they acquire the foundations of self-reflection and abstract thinking, as well as developing complex communication and meta-communication skills. In playing, they learn to manage their emotions and explore the roles and rules of functioning in adult society. Children create an independent, autonomous life together with other children with play as a central activity (Verenikina et al. 2003; Vickerius & Sandberg 2006).

In Thailand, the extent to which Thai children play at home is not well documented. More than a decade ago, Saikaew (1994) surveyed caregivers of children aged under three years in the northeast province of Thailand regarding play practices at home. The results indicated that about half (51.27%) of the children played at home. The majority of toys (67.37%) played with by the children were bought from trading stores. 13.31% of toys were natural objects, while the remaining were household objects (8.47%) and homemade toys (4.23%). In terms of playmates, 61.86% of boys and girls played with friends of the same sex. With regard to age of playmates, 61.14% played with friends of a similar age. Approximately 11% reported having no playmates at all. In 2006, it

was reported that 67.3%, 26.3%, 28.5% and 25.1% of children aged 0-23 months played with commercial toys, natural objects, household objects and homemade toys respectively (Thailand National Statistical Office 2006). Interestingly, 20.1% of the children surveyed did not have any toys to play with. The same study reported a significantly higher proportion of children aged 24-59 months playing with toys than their younger counterparts did. Almost all (99.4%) children of this age group played with toys. The 2008-2009 National Survey of Health of Thai Children reported that 39.6% and 56.2% of Thai children aged 1-5 years spent more than two hours watching television during weekdays and weekends respectively (Aekplakorn et al. 2010). Watching television may be suggestive of barriers to physical and other developmental activities among a majority of young Thai children (Kanchanachitra et al. 2008). Others, for example Srikanth et al. (2008), have documented Thai sports and traditional games played by Thai people at all ages. Otherwise, very little research has been undertaken about the extent to which play is practised by children and family outside childcare centres in terms of type, amount, time of play and people involved. The lack of play literature in Thailand may reflect a lack of recognition of play importance in child development in the country.

**In recognition of** its importance, play is a well-established curriculum component of English childhood education (Gmitrova et al. 2009). The Early Years Foundation Stage (EYFS) Curriculum set out by the Department for Children, Schools and Families (DFES) in the UK (2010) shows that many forms of play help children to learn; this is now widely considered to be the most appropriate approach for facilitating children's learning and development. In England, most childcare providers **use** high-quality play in order **to** encourage **children's** Social, Physical, Intellectual, Creative and Emotional development (SPICE) (The National Strategies 2010). Therefore, childcare providers are **an important influence on a child's early development** (Fontaine et al. 2006).

### 1.2.2.2 Theories of Play and Child Development

There are several theoretical frameworks for furthering understanding and interpretation of play (Holmes & Romeo 2012). Classical and modern theories of play traditionally relate to the behaviour and activities of children (Mellou 1994). These theories have identified the many ways in which play can aid all aspects of child development (Verenikina et al. 2003). Classical theories of play originated in the nineteenth century and tried to explain the existence and purpose of play. Modern theories were developed after 1920 and attempted to explain the role of play in child development (Mellou 1994).

Table 1.3 is based on **Stagnitti's** study (2004) **which is in turn based on Mellou's** categorisation of play theories. The table presents four classical theories and five

modern theories of play, and also includes the subcategory of sociocultural theories of play.

Theory name	Summary of theory
Classical theories: Surplus Energy Theory (Spencer, 1878)	Play occurs because children have excess energy.
Recreation or Relaxation Theory (Lazarus, 1883)	Play occurs because children need to restore their energy or relax.
Pre-exercise Theory (Groos, 1885)	Play is a product of an evolutionary biological process. It emerges from instincts and exercises. Play serves an adaptive purpose, because through it the child constructs the adaptive skills that they will require throughout life.
Recapitulation Theory (Hall, 1920)	Play is a product of an evolutionary biological process. Through play, primitive instincts are weakened. Play development follows the evolutionary development of the human race.
Modern theories: Arousal Modulation Theories of Play (Berlyne, 1960; Ellis, 1973; Hutt, 1985)	Play is associated with exploration. Exploration of objects reduces the level of arousal when novel situations are encountered. When the organism is bored, arousal is increased by exploration. Play was seen as stimulus-seeking behaviour. Eventually, these theories led to a distinction between exploration and play. <b>Exploration occurred in novel situations, where the child asked, 'What can this object do?'</b> Play occurred in familiar situations, where the child asked, 'What can I do with this object?'
Psychodynamic Theories of Play (Freud, 1961; Erikson, 1985)	These theories explain the role of play in the emotional development of children. Through play, children can imagine wish-fulfilment and deal with the experience of traumatic events in their lives.
Cognitive Developmental Theories of Play (Piaget, 1962; Vygotsky, 1966, 1997)	Play is a cognitive process. Play is a voluntary activity. Play contributes to cognitive development, problem solving, and creative thought. Play develops innovation, flexibility, enhanced problem solving and adaptation.
Sociocultural theories of play: Play as socialisation (Mead, 1934)	Through play with other children, children learn social rules and norms. Social roles are practised through play.
Metacommunicative theory (Bateson, 1955)	Play itself is the skill required to carry out the real work of daily life. Children frame and reframe roles themselves. Play is learning about learning. Play is affected by the context in which it takes place. Children signal that they are playing, and play is not an agent of socialisation which develops skills for adulthood.

Table 1.3: Theories of Play (Stagnitti 2004)

### 1.2.3 Nursery Workers

#### 1.2.3.1 Nursery Workers and Child Development

Nursery workers have a very important role in creating experiences that contribute to the development of the children attending the childcare centres (Sueluerm et al. 2008). Bosch & Jacobs (1998) have confirmed that childcare providers are one of the most important elements in quality childcare centres.

A skilled adult who interacts with children in particular ways in order to enhance their learning is a crucial ingredient in their progress (De Schipper et al. 2006b; Hedges & Cullen 2012). **Childcare providers should identify children's interests and abilities and** develop them through play (Vickerius & Sandberg 2006; Sandberg & Heden 2011). In addition, each child should receive individual support while enjoying learning through play (Sandberg & Heden 2011). To develop into a well-adjusted adult, children need supportive adults who can spend time with them (Ginsburg et al. 2007). They need people who will provide love, care, attention and encouragement. Therefore, it can be inferred that nursery workers who normally spend considerable productive time with children are an important asset in developing future adults who will eventually contribute to their communities.

The ability to view an attachment figure as a secure base affords a haven of safety to children and also provides them with the necessary confidence to explore and master ordinary environments. Interactions between nursery workers and children promote the kinds of responsive care and playful, game-link interactions that children enjoy (Ainsworth 1978; Bowlby 1991). Furthermore, when nursery workers develop an attachment to particular children, rather than merely having an affectionate interest in all the children in their room group, they are less likely to need time off from the stresses of managing so many children at once (Elfer et al. 2003).

#### 1.2.3.2 The Nursery Worker: Child Ratio in Childcare Centres

**Prochner's research** (2002) illustrates that the hallmarks of high preschool quality are small group sizes, stringent teacher-to-child ratios and 'developmentally appropriate' curriculum models. Good staffing ratios are an essential ingredient in quality childcare settings; there must be a sufficient number of adults for the number of children (de Schipper et al. 2006a). **Munton et al's** (2002) research supports the view that staff:child ratios influence the quality of care provided to infants and preschool-aged children.

Higher staff:child ratios (more staff per group of children) are more likely to facilitate positive adult:child interactions. When staff work with fewer children, they tend to be able to provide more sensitive, responsive care and individual attention (de Schipper et

al. 2006a; Roa & Sun 2010). Furthermore, experiences in good quality early-years settings can have a small but positive impact on developmental outcomes for infants and preschool-aged children (Roa & Sun 2010).

**A predominance of child-initiated activities, higher levels of teacher education, more educational materials and less time spent in whole group activities are all associated with better developmental outcomes (Montie et al. 2006).** However, the influence of staff:child ratios cannot be considered independently of other factors such as staff education and training, salaries and group size; due to these complex interactions, it is impossible to draw precise conclusions from the research about optimum staff:child ratios (Munton et al. 2002).

The Early Years Foundation Curriculum in the UK (DfES 2006) sets out maximum ratios of children to care providers (see Table 1.4). There are three groups: children aged under two (one member of staff for every three children), children aged two years (one member of staff for every four children) and children aged three and over (one member of staff for every thirteen children). For a comparison with Thailand, the table also shows the ratio set out by the Department of Health (de Los Angeles-Bantista 2004).

Approximate Age	Child to Nursery Worker	
	Thailand	United Kingdom
0-1 years	3:1	Children aged under two: 3:1
1-2 years	6:1	Children aged two: 4:1
2-3 years	8:1	4:1
3-4 years	12:1	Children aged three and over: 13:1
4-6 years	20:1	

Table 1.4: The Official Ratio of Children to Nursery Workers (DfES 2006; The Department of Health 2009; Database 2010)

Although the child to nursery worker ratio for children under two years is the same for both countries, the ratio in Thailand for children over two years is dramatically higher than in the UK. The smaller ratios are believed to promote more child-to-nursery **worker interactions, thus facilitating a child's responsiveness to people and objects** (de Schipper et al. 2006a). When children play, nursery workers should be vigilant in supervising them at all times (DfES 2006). The high ratio in Thailand reduces these interactions between child and nursery worker.

Recent research conducted in Thai childcare centres has confirmed that the average ratio of nursery worker:child is 1:20-25 (Isaranurug et al. 2007; Chompikul et al. 2008; Kanchanachitra et al. 2008; Sueluerm et al. 2008). The youngest average age for children at the centres is 25.4 months old and the highest average age for any centre is 33 months old (Isaranurug et al. 2007). The childcare centres generally admit children even in cases where the child is younger than the admission criterion.

Additionally, the roles of childcare providers in Thailand are complex. As mentioned above, they have many duties such as cooking, cleaning and administration in addition to their primary duty of caring for children (Isaranurug et al. 2007; Chompikul et al. 2008; Kanchanachitra et al. 2008; Sueluerm et al. 2008). Consequently, the ratio of nursery workers to children, coupled with the complex duties, may affect the quality of childcare in these areas.

### 1.2.3.3 Thai Nursery Workers

In Thailand, staff in childcare centres who are directly responsible for taking care of children are called caregivers, while those working in kindergarten schools are teachers. As the notion of teacher licensing has not yet taken hold, nursery workers do not need to undertake any kind of professional qualification examination. There are, however, some differences in qualifications between teachers in kindergarten and caregivers or nursery workers in childcare centres. The minimum requirement for kindergarten teachers is a **four-year undergraduate course leading to a bachelor's degree** in education or a related course. The minimum requirement for nursery workers is that they are over 18 years old and have completed the nine years of compulsory education. Chompikul et al. (2008) suggest that, in order to promote child development, Sub-District Administrative Organisations (SAOs) should hire at least one nursery worker per childcare centre who has qualifications equivalent to **a bachelor's degree** in Early Childhood Education majoring in primary education.

Aekphong (2008) interviewed 80 Thai nursery workers in 54 daycare centres about their knowledge, attitudes and practices towards the development of the IQ and EQ of children. The findings showed that nursery workers had low levels of knowledge relating to childhood IQ and EQ development, but higher levels in attitudes and practices. Despite their low levels of knowledge, the nursery workers were concerned about childhood IQ and EQ development. However, this concern, even with the high level in attitudes, does not translate into high-**quality care, as the nursery workers' enthusiasm is not underpinned by the required skills and training** (Kantitharangkul et al. 2002).

### 1.2.3.4 Education of Thai Nursery Workers

Many studies reveal that the educational levels of Thai nursery workers are low. An interesting study is that of Chompikul et al. (2008) who conducted their research in eight different provinces from all five regions of Thailand. Thai nursery workers in the different provinces were found to have dissimilar educational backgrounds. The majority of workers held upper secondary level qualifications, while the minority held lower secondary level qualifications. An exception was the Udonthani province, where

most nursery workers had completed vocational and technical education. In Nakhon Pathom and Trang, the workers mainly held bachelor's degrees.

Sueluerm et al. (2008), whose research, similarly, was conducted in 30 locations among all five provinces, found that the majority of nursery workers had completed upper secondary school and vocational and technical education. One in seven nursery workers held a bachelor's degree in early childhood education.

The higher level of education attained by a caseworker in a childcare setting, the more influence they have on the development of children in that particular childcare setting (Mo-suwan et al. 2000; Anderson et al. 2003; Janchua et al. 2004; Mo-suwan et al. 2004; Chompikul et al. 2008; Kanchanachitra et al. 2008; Sueluerm et al. 2008). To address the problem with the poor education level of nursery workers, the Department of Local Administration (DLA) has signed a memorandum of understanding with Suan Dusit Rajabhat University. The main purpose of this is to provide funding for nursery workers who want to enhance their knowledge by improving their education level to at least a bachelor's degree in education, majoring in primary or early childhood education (The Department of Local Administration 2010). This illustrates that nursery workers now have more access to higher education.

#### 1.2.3.5 Childcare Award Bodies in the UK

The Office for Standards in Education, a government body in the UK, regulates the provision of childcare for children under eight years old. People working in a registered childcare setting are required to have a recognised qualification. There are two main ways to achieve a qualification in early-years care, childcare education and playwork (Department for Education and Skills 2004):

1. Vocationally Related Qualifications (VRQs) can be gained at a local venue, further education college, Sixth Form College or other learning centre.
2. National Vocational Qualifications (NVQs) are work-related, competence-based qualifications.

Both VRQs and NVQs involve some practical experience in a work setting through full-time, part-time or distance learning. Table 1.15 shows the type of qualification levels for early-years care, childcare and playwork.

Occupational qualifications	Vocationally-related qualifications (awarding body)	Job roles
Foundation	People with little or no experience of working with children	Optional, short courses at Foundation level to prepare for Level 2 study or practical experience as an apprentice
NVQ Level 2 in Early Years Care and Education (This NVQ is awarded by C&G, CACHE, Edexcel and the Open University)	<ul style="list-style-type: none"> <li>- Foundation Award in Caring for Children (CACHE)</li> <li>- Level 2 Certificate in Child Care and Education (CACHE)</li> <li>- Level 2 Certificate in Preschool Practice (CACHE)</li> <li>- Level 2 Progression Award in Early Years Care and Education (C&amp;G)</li> <li>- Intermediate Certificate in Developing Skills for Working with Children and Young People (NCFE)</li> <li>- Level 2 Certificate in Contributing to the Early Years Setting (C&amp;G)</li> <li>- Intermediate Certificate in Developing Skills for Early Years Practice (NCFE)</li> <li>- Level 2 Certificate in Early Years Practice (CACHE)</li> <li>- Level 2 BTEC First Diploma in Early Years (EDEXCEL)</li> </ul>	<ul style="list-style-type: none"> <li>Roles involving working under supervision with children under five such as:</li> <li>- Au Pair</li> <li>- Babysitter</li> <li>- Crèche Assistant</li> <li>- Mothers/Fathers Help</li> <li>- Nursery Assistant</li> <li>- Playgroup Assistant</li> <li>- Preschool Assistant</li> <li>- Teacher Assistant</li> <li>- Parent/Toddler Group Assistant</li> <li>- Toy Library Worker</li> <li>- Homestart Worker</li> </ul>
NVQ Level 3 in Early Years Care and Education (This NVQ is awarded by C&G, CACHE, Edexcel and the Open University)	<ul style="list-style-type: none"> <li>- Level 3 Diploma in Child Care and Education (CACHE)</li> <li>- Level 3 Certificate in Childminding Practice (CACHE)</li> <li>- Level 3 Certificate of Professional Development in Work with Children and Young People (CACHE)</li> <li>- Level 3 Diploma in Preschool Practice (CACHE)</li> <li>- Level 3 Diploma in Early Years Care &amp; Education (Welsh Medium) (CACHE)</li> <li>- Level 3 Diploma in Playgroup Practice in Wales (CACHE)</li> <li>- Level 3 BTEC National Certificate in Early Years (EDEXCEL)</li> <li>- Level 3 BTEC National Diploma in Early Years (EDEXCEL)</li> </ul>	<ul style="list-style-type: none"> <li>Roles involving working on own initiative, planning and organising own work and supervising others, such as:</li> <li>- Childminder</li> <li>- Maternity Nurse</li> <li>- Nanny</li> <li>- Nursery Nurse</li> <li>- Nursery Room Leader</li> <li>- Preschool Leader</li> <li>- Senior Playworker</li> <li>- Teacher Assistant</li> <li>- Nursery Supervisor</li> <li>- Crèche Leader</li> <li>- Playgroup Leader</li> <li>- Toy Library Leader</li> <li>- Special Educational Needs Supporter</li> </ul>
NVQ Level 4 in Early Years Care and Education (This NVQ is awarded by C&G and CACHE)	- Level 4 Certificate in Early Years Practice (OU)	<ul style="list-style-type: none"> <li>Roles for experienced practitioners carrying out complex and non-routine tasks such as:</li> <li>- Nursery Deputy Manager</li> <li>- Nursery Manager</li> <li>- Development Officer</li> <li>- Advanced Practitioner</li> </ul>

Table 1.5: Levels of Qualification in Early-Years Care, Childcare Education and Playwork (Department for Education and Skills 2004)

There are several awarding bodies in the UK for NVQs and VRQs in early-years care, childcare education and playwork. To work with young children in a registered daycare setting, the required qualification is Level 2 or 3 NVQ in Early Years Care and Education (Department for Education and Skills 2004).

1. CACHE (The Council for Awards in Care, Health and Education) is **the UK's only leading specialist awarding organisation for both the care and education sector that develops courses and qualifications for learners and employers.** Their courses range **from entry level to advanced qualifications that meet the professional standards of the childcare, adult care, education and healthcare workforce and its allied disciplines.**
2. Edexcel offers a range of qualifications in many career areas. These include BTEC qualifications and NVQs in childcare. BTECs are work-related qualifications that provide a practical, real-world approach to learning. These allow people who have no formal qualification, but who are already working in the relevant area, an opportunity to gain a recognised qualification. They learn practical, work-related tasks designed to help them develop the skills and knowledge to do their jobs effectively.
3. City and Guilds (C&G) is a provider of vocational qualifications across a range of subjects. Their qualifications assess skills that are of practical value in the workplace.
4. Education Development International (EDI) is an awarding body, part of GOAL, which is a schools training provider.
5. National Open College Network is an awarding body for adult education through open college networks throughout the country. Qualifications available include basic skills, working with children and childcare.
6. Northern Council for Further Education (NCFE) is a national awarding body, which offers qualifications in childcare education and playwork, youth and community work.
7. **The Open University is Britain's largest university, with more than 200,000 students studying from home or at their workplace. They offer degrees in a range of related childhood and playwork studies.**
8. The Montessori Method is an internationally renowned qualification. It is a **method for giving individual care and attention to a child's needs, allowing the**

child to fulfil their highest potential spiritually, emotionally, physically and intellectually.

The courses and qualifications in the UK have been developed to provide knowledge, understanding and practical training for childcare and education practitioners who work with children and families in a wide range of settings. These prepare learners for employment and provide career development opportunities for those already in work. The settings in the UK curricula include childminding, play groups, crèches, nurseries, infant or primary schools or classes, day nurseries, family centres, play settings and hospitals within the public, private and voluntary sectors.

Training opportunities are offered to all nursery workers and practitioners working within the early-years sector, in every city. The majority of practitioners are now able to access training in order to develop their knowledge, understanding and practice. The Early Years and Childcare Workforce Development team organises the Continuous Professional Development (CPD) training course programme every year. The course is **aimed at building nursery workers' skills, abilities and knowledge, so that they can provide a safe, stimulating and welcoming environment for the children in their care.**

#### 1.2.3.6 Childcare Award Bodies in Thailand

In Thailand, both state and private childcare has historically been established under various ministries and organisations, for example the Nutrition Division of the Ministry of Public Health, the Ministry of Education, the Ministry of Interior (managed by the Community Development Department and the Department of Local Administration) and the Department of Religious Affairs at the Ministry of Culture (Kanchanachitra et al. 2008).

Due to numerous changes in management, it is not surprising that childcare policies and funding for staff training have not been consistent during the past decade. In 1999, all state nurseries were brought under the local and elected control of Sub-District Administrative Organisations (SAOs) and the supervision of the Department of Local Administration (DLA) at the Ministry of Interior (Theptien & Trakulwong 2007).

It was not until 2004 that the DLA introduced a staff training policy with training workshops offered to all state nursery workers. The workshops are organised by the Division of Non-Formal Education Promotion and Youth Activities Development and the Bureau of Local Educational Development, and are coordinated by the Department of Local Administration (DLA) in Bangkok, Thailand. This training has been designed by experts and lecturers from various renowned universities such as the Faculty of Education at Chulalongkorn University, Kasetsart University, Rajabhat Soundusit

University, Kasetsart University Laboratory School Centre of Educational Research and Development and the Department of Health.

However, the workshops are not greatly popular, as they only take place in Bangkok and a nearby province, Nonthaburi. This means that nursery workers from other parts of Thailand have to travel either to Bangkok or Nonthaburi province for their short training course (The Department of Local Administration 2010). Nursery workers would usually attend this training course after gaining work experience.

#### 1.2.4 Training

##### 1.2.4.1 Programme

**Engle et al's study** (2007) examined the characteristics of early intervention programmes that were effective in promoting early child development (ECD) through preventing or ameliorating developmental impairment. The most effective ECD interventions provide younger, disadvantaged children and families with direct learning experiences of adequate duration, high intensity and high quality, including integration with family support, health and nutrition services. The study suggested that service providers should consider expanding these high-quality, cost-effective ECD programmes. **Eloff and de Wet's** (2009) study sought assets and resources for enriching preschool learning in a community challenged by poverty. The results of this research study suggested that the community was rich with potential, opportunities and material for improving learning. It can be seen, therefore, that adequate stimulation is essential to development during the first three years of life (WHO 2009).

##### 1.2.4.2 Training Staff

Research evidence is consistent with the view that group size and staff training/qualifications are just two of several factors, including adult:child ratios, that have a small but significant impact on the quality of interactions between staff and children. Because several factors are implicated in the quality of adult-child interactions in care settings, it is difficult for researchers to identify the unique influence of either group size or staff qualifications and training. Through their impact on the quality of adult-child interactions, evidence suggests that these two factors can have a positive influence on developmental outcomes for children. Smaller group sizes and better-trained staff are more likely to provide suitable environments for effective child development (Munton et al. 2002).

The research findings of (Munton et al. 2002) concerning staff qualifications and group size can be summarised thus:

- Evidence suggests some degree of association between staff qualifications, group size and positive caregiver behaviour.
- Positive caregiver behaviour is linked with better developmental outcomes for children.
- Links between staff qualifications, group size and global measures of service performance are more tenuous.

Potter and Hodgson (2007) explored the impact of a reflective training approach designed to facilitate the area of language promotion and to enhance interactions between adults and children in early-years settings. The results found that the training succeeded in facilitating and increasing reflection in early-years activity, which resulted in some major changes in practice. Another recommendation for future policy and practice is the requirement of training courses for all staff working in early-years services.

#### 1.2.4.3 Training Nursery Workers in Thailand

Thai nursery workers need to improve both the quantity and quality of their care. Additionally, the Department of Local Administration (DLA) should provide proper development and some additional subsidies to childcare centres. Since the Decentralisation Act in Thailand, the six days of training that used to be provided for all nursery workers in state childcare centres is only available in the Bangkok and Nonthaburi provinces. On average, the DLA (2010) trains 320-350 nursery workers at a time, 15-20 times a year. This is a total of approximately 4,500-7,000 nursery workers trained every year.

The DLA (2010) surveyed the country and found that there were a total of 43,378 nursery workers caring for 789,760 children in 18,222 childcare centres.

Approximately 24,000 nursery workers have received training from the DLA, which means that currently, nearly 20,000 Thai nursery workers have not received official training. The provision of effective training for nursery workers, who care for children in childcare centres during their crucial development period, should be seriously considered. Indeed, Jaturapat (2004) concluded that training can improve the human capacity for behaviour, knowledge, understanding, teaching skills, attitudes, values and interests, resulting in work effectiveness and efficiency (Hannon & Brown 2008).

Recently, the DLA has started offering workshops for nursery workers in childcare centres. However, these workshops have not yet been satisfactory or effective in terms of enhancing the actual skills of childcare staff. To this end, this researcher believes that **effective training of nursery workers should be considered imperative to children's development** (Choprapawan 2000; Draper et al. 2001; Anderson et al. 2003; Mo-

suwan et al. 2004). Even in the less advantaged areas, children's growth and development could be improved significantly if nursery workers received appropriate participatory in-service training (Uraisawat 2005). It is clear that nursery work in Thailand needs to be improved.

### 1.3 Problem Statement

This chapter has highlighted three main causes for the delay in child development in Thailand: policy, the poor education of nursery workers and the ineffective training of said workers. Policy and the education of nursery workers are being improved, albeit slowly, by the Thai government. The positive outcomes of these improvements will take time to come into effect. Conversely, the ineffective training of nursery workers could be alleviated in a relatively short period of time.

Children deprived of appropriate development during the early years might have problems in the future. Thus, quality childcare during these years plays an important role in helping children to create and fulfil their potential, and leads to the development of the nation in general. Problems in childcare centres include a lack of knowledge on the part of nursery workers, inadequate materials, equipment and budgets, and poor building structures and management. Levels of child development might increase as nursery workers become more knowledgeable, creating a more suitable play environment.

**From an educational perspective, this research project draws on Knowles' theory (1998) of adult learning and Kirkpatrick's framework (2006) for evaluation of training.** Knowles' adult learning theory (1998) was chosen because it provides a theoretical basis appropriate for adult learners such as Thai nursery workers. The theory encompasses five principles for effective learning. In order for the training to be effective, it must accommodate the needs and interest of learners, serve real life situations, acknowledge learners' prior experiences, respect learners' individual differences and be self-directing. The theory also provides a framework for training programme development, implementation and evaluation. When considering the **evaluation of the training, Kirkpatrick's framework** (2006) identifies the four levels of evaluation, namely reaction, learning, behaviour and results. According to Kirkpatrick (2006), the former level influences the latter, suggesting a sequence of methods to evaluate training. In this study, the focus of evaluation was primarily on learning by assessing changes in attitude and knowledge towards the importance of play and play environments.

In conclusion, this researcher has focused on developing a training programme for Thai nursery workers. The programme aims to teach them how to provide inclusive,

holistic and high-quality care, create suitable play environments and promote **children's overall development**. If the programme is successful, nursery workers will be able to gain knowledge of and improve their attitudes to the play environment, apply their new learning to their daily work and disseminate it to colleagues.

## 1.4 Overview of the Thesis

This thesis is divided into six chapters including introduction, literature review and critical appraisal, research methodology and methods, research results and data analysis, discussion of research findings and conclusion and recommendation.

### Chapter 1: Introduction

The first chapter has introduced the background analysis of the research, relating to the significance of the play environment and the impact of nursery workers on child development. Research problems have also been discussed in order to understand the delay in child development in Thailand, the ineffectiveness of the nursery worker training programme, and the unsuccessful government policy on childcare centres.

### Chapter 2: Literature Review and Critical Appraisal

The aim of the second chapter is to explore the existing literature relating to the research questions. The chapter will be divided into two parts: Part I: systemic search methods and Part II: critical appraisal of the selected literature.

### Chapter 3: Research Methodology and Methods

The third chapter of this research will mainly explain how the research will be conducted in order to answer the research questions, and archive its aims and objectives. Research methodology will be discussed and presented in detail. The topics are: research paradigms and methodology and methods; an overview of mixed methods research; research methods in phase I: part A (content analysis); the use of the content analysis results to design the research instrument (phase I: part B); research methods in phase II: part A (quasi-experiment); research methods in phase II: part B (semi-structured interviews); ethical considerations; and data protection issues.

### Chapter 4: Research Results

In the fourth chapter, the results from the full set of data collection from both Phase II: Part A (questionnaires) and Phase II: Part B (semi-structured interviews) will be presented.

In the questionnaires results section, all valid questionnaires from three different groups will be displayed. One group received the multimedia teaching package training

(the Lampang intervention group), one received no training (the Lampang control group) and one received the official government training (the Nonthaburi control group). Data gained from the questionnaires method will be analysed and displayed by applying SPSS.

The second part of the chapter will present the results of the semi-structured interviews conducted with nursery workers from the Lampang intervention group, in order to explore the reasons for the results and understand their views and feedback on the new training programme proposed. Data from the semi-structured interviews will be presented in the form of thematic analysis. Literature reviews previously mentioned in the second chapter will be used to support and analyse the outcomes found. The results from both Part A and Part B in Phase II will be used to answer the research question.

#### Chapter 5: Discussion of Research Findings

In this chapter, an intensive analysis and discussion of research results will take place in order to understand the overall phenomenon of the entire problem statement and ascertain whether the aims and objectives of this research have been met.

#### Chapter 6: Conclusions and Recommendations

In the final chapter, the conclusions of this research will be demonstrated as overall results and analysis. Empiricism from the research will also be discussed, featuring recommendations for future similar types of studies, nursing practice, nursing education, nursing research, private and public early-years settings, and nurseries and childcare centre organisations managed by the Thai government. Moreover, it will include a recommendation for further relevant studies in order to gain more insight into the issue, alongside details of related future research.



# Chapter 2: Literature Review and Critical Appraisal

The aim of this chapter is to present a review of the literature and a critical appraisal of **nursery workers' training relating to the importance of play and the play environment** and its ability to promote child development. The chapter will begin with an explanation of the literature search strategy in order to clarify how the research articles were narrowed down to an essential selection, and will conclude with a summary of the final articles chosen to appraise and synthesise. The gaps within the evidence base are identified. The theoretical underpinnings of adult training are described later in the chapter. The research question, aim and objectives of the study will then be formulated to address the gaps in the literature and on the basis of adult learning theory.

## 2.1 Literature Search Strategy

A literature search strategy is an essential stage of the research process; it is a core competency for discovering relevant information to use in research (Beaven & Craig 2007). Rumsey (2004) suggested that for a literature search to be successful, there are a series of steps that need to be undertaken. Five steps were demonstrated for planning an effective search strategy: Search Terms, Limits, Truncation, Wildcards/Phrases and Boolean Logic/Other Connectors. In this study, this search strategy was followed in order to conduct a thorough and complete literature search.

A literature review presents the current knowledge of the problem studied, a recognition of the gaps in this knowledge base and an understanding of the contribution of the current study to constructing new knowledge (Burns & Grove 2009). A systematic search illustrates how relevant and current research is accessed and appraised. A literature search involves a process of looking for specific information and providing a summary of the existing knowledge on a research subject. The process of the literature search will be explained, and a demonstration will be provided of how the research articles in this study were reviewed.

### 2.1.1 Selection of Evidence

The selection of evidence requires a systematic and rigorous approach, with the purpose of generating new knowledge or information, using disciplined methods in order to answer questions and solve problems in the pursuit of creating new knowledge about health and social care (Hek & Moule 2006; Polit & Beck 2010). To

accomplish these diverse ambitions, researchers must adopt a literature search strategy in order to interrogate the sources of information contained in healthcare publications during the study period and obtain the necessary skills to access the resources (Rumsey 2004; Parahoo 2006; Craig 2007).

### 2.1.1.1 Identifying Search Terms

Posing a PICO model of formulation can help in constructing an answerable search question in order to discover the relevant evidence for a study (Gasper & Rees 2013a). Moreover, using the PICO framework results in improved literature search strategies, as the words in the PICO statement are used as the key search terms in the databases. Each aspect of the PICO format should be considered in depth in order to generate a clearly articulated question (Melnyk & Fineout-Overholt 2005). This will generate more accurate results that are more likely to locate data driven papers; when subjected to critical appraisal, these results will help to support or reject the proposed intervention (Gasper & Rees 2013a). Table 2.1 explains the meaning of the four elements and the words selected for this study in particular. The PICO question designed for this **literature search is 'Are Thai nursery workers appropriately trained to deliver play strategies to children in their care?'**

Abbreviation	Word represented by letter	Meaning of the word in terms of question	Keywords selected for this study
P	Population	What group do you want information on?	Thai nursery workers in childcare centres
I	Intervention	What event do you want to study the effect of?	Training or teaching pertinent to the play environment (training package/training programme)
C	Comparison	Compared to what? Better or worse than no intervention, or another intervention altogether?	Standard training group and no training group
O	Outcome	What is the effect of the intervention?	Higher improvement in knowledge and attitudes about the play environment

Table 2.1: Using PICO to Formulate Questions (Kirton 2006; Gasper & Rees 2013a)

After identifying the research areas to be explored, the keywords need to be identified in order to assist the literature search. This can be done by completing a data search in order to find the most suitable evidence. In this study, the researcher determined six keyword concepts (see Table 2.2) and identified alternative terms/synonyms for each concept. The synonyms for this study are summarised in Table 2.3 for English language and in Table 2.4 for Thai language. Rumsey (2004) suggested using a

dictionary, thesaurus and possibly an encyclopaedia for the particular subject area. Appendix 2.3 shows an illustrational example how this researcher used a thesaurus to identify search terms (in English databases) for this study.

Concept Group 1	To identify the training programmes <b>Use term 'train'</b>
Concept Group 2	To identify the staff being trained <b>Use term 'nursery'</b>
Concept Group 3	To identify the setting to locate relevant studies <b>Use terms 'preschool' or 'day care'</b>
Concept Group 4	To identify child development aimed at developing new skills <b>Use term 'child development'</b>
Concept Group 5	To identify activities that should be encouraged in nurseries <b>Use term 'play'</b>
Concept Group 6	To identify the environment <b>Use term 'environment'</b>

Table 2.2: Identifying Search Terms

Concept group 1: To identify the training programmes Use term 'train'	Concept group 2: To identify the staff being trained Use term 'nursery'	Concept group 3: To identify the place where the staff work Use terms 'preschool' 'day care'	Concept group 4: To identify child development aimed at developing weak skills Use term 'child development'	Concept group 5: To identify activities that should be encouraged in nurseries Use term 'play'	Concept group 6: To identify the environment Use term 'environment'
Develop*	Teacher*	Prekindergarten	Child* Develop*	Play*	Environment
Motivat*	Worker	Pre-kindergarten			Surrounding*
Educat*	Nurse*	Pre-school			Circumstance
Teach*	Care*	Preschool*			Atmosphere
Train*	Staff	Nurser*			Ambience
Empower*		Childcare			Ambiance
Enhance*		Early childhood			Ambient
Improv*		Caregiver*			Setting
Instruct*					Milieu
Prepar*					Context
Experiment*					

Table 2.3: Identifying English Synonyms of Search Terms

Concept group 1: To identify the training programmes <b>การฝึกอบรม</b>	Concept group 2: To identify the staff being trained <b>ผู้ดูแลเด็ก</b>	Concept group 3: To identify the place where the staff work <b>ศูนย์พัฒนาเด็กเล็ก</b>	Concept group 4: To identify child development aimed at developing weak skills <b>พัฒนาการเด็ก</b>	Concept group 5: To identify activities that should be encouraged in nurseries <b>เล่น</b>	Concept group 6: To identify the environment <b>สิ่งแวดล้อม</b>
<b>การฝึก (Training)</b>	<b>ผู้ดูแลเด็ก</b> (Childcare)	<b>ศูนย์พัฒนาเด็กก่อน วัยเรียน</b> (Preschool child development centre)	<b>พัฒนาการเด็ก</b> (Child development)	<b>เล่น</b> (Play)	<b>สิ่งแวดล้อม</b> (Environment)
<b>การพัฒนา</b> (Development)	<b>บุคลากร</b> (Personal)	<b>ศูนย์เด็กก่อนวัยเรียน</b> (Prekindergarten centre)		<b>การเล่น</b> (Playing)	<b>สภาพแวดล้อม</b> (Surroundings)
<b>การส่งเสริม</b> (Promotion)	<b>ผู้ดูแลเด็ก</b> (Nursery worker)	<b>ศูนย์พัฒนาเด็กเล็ก</b> (Childcare centre)		<b>การจัดกิจกรรม</b> (Activity)	<b>บรรยายกาศ</b> (Milieu)
<b>โปรแกรม</b> (Programme)					<b>ห้องเรียน</b> (Class)
<b>ทักษะ</b> (Skill)					
<b>อบรม</b> (Teach)					

Table 2.4: Identifying Thai and English Synonyms for Search Terms

### 2.1.1.2 Set Limits

Most databases allow the setting of restrictions or ‘limits’ on the results. Types of limits vary in each database; they can include publication dates, language of the article and whether the record has an English abstract. There may also be limits available on types of articles, for example meta-analysis, practice guidelines or subject populations. English database searches are limited to the selection of human/animal, male/female, age group or publication year (Rumsey 2004; Beaven 2007).

Complying with inclusion and exclusion criteria ensures that the relevant publications are identified (Polit & Beck 2010) and used to clarify and define the limits of the search (Parahoo 2006). For this study, the inclusion and exclusion criteria and their reasoning are illustrated in Table 2.5.

Inclusion Criteria	Exclusion Criteria	Reasoning
Articles relating to preschool and a regular childcare setting.	Articles about school-age, adolescent or adult studies.	This study required articles relating to preschool children as this is the basis of the dissertation.
Articles about children with no special education, disabilities or residential childcare.	Articles related to children with disabilities, behaviour problems, mental health, learning difficulties, special needs and/or education, hospitalisation, sexuality or disease.	Articles relating to these issues would be irrelevant as they are not the basis of the dissertation.
The best available evidence found from the search methods.	Evidence with poor outcomes/variables or that presents poor arguments in relation to each other.	This study required the best available evidence for the best results in producing a valid argument and hopefully answering the project question.
Articles written after 2000 (both English and Thai language).		The best up-to-date information for this dissertation would ensure an accurate knowledge base.
Research articles only.	Other types of material such as book reviews and news.	There was a need to limit the search by type of material.

Table 2.5: Inclusion and Exclusion Criteria for the Literature Search

### 2.1.1.3 Truncation and Wildcards

Truncation and wildcards use a series of symbols to maximise each search string for relevant research articles. Using ‘?’ within a word allows alternative spellings of words to be searched. For example, ‘Pediatric’ and ‘Paediatric’ would require two different search strings. By searching for ‘P?ediatric’, both variants of the term can be searched.

Meanwhile, the use of \* allows different uses of suffixes and prefixes to be explored. **In order to retrieve all publications relating to 'Child' or 'Children', the use of a \* at the end of Child (Child\*) allows all the variants to be selected (Rumsey 2004; Beaven & Craig 2007).** In this study, only truncation was used, because there were no alternative spellings of search terms (see Table 2.3).

#### 2.1.1.4 Boolean Searching and Boolean Logic

**Searching for information within a database requires a process known as 'Boolean searching'. It can be used in any database or website by using a search engine or searching a bibliographic database for articles on a particular subject.** Boolean logic refers to the logical relationship between the search terms. These are expressed using **'operators' or 'logical operators'** (Rumsey 2004). As Beaven and Craig (2007) explained, AND will make search results smaller and more specific while OR will make results larger. This can be used to combine similar subject terms together (for example, **'health promotion OR health education'** will find articles about either health promotion or health education or both). NOT will help to exclude certain subjects (The University of Southampton Library 2012).

Appendix 2.4 is an illustrated example from one of the English databases, CINAHL. This researcher used the thesaurus to find more specific free-text words using related subject terms. When a search is run for the terms and any of the more specific terms listed under them, using exploding will include all narrow terms. Terms are then combined together in the same concept group, with OR showing that one of the terms appearing in each match has been retrieved. In the case of two or three words/phrases, the words were grouped using quotation marks and parentheses in order to ensure that the results with these two or three words would stay together. All results were found in the Social Sciences Subject Area.

#### 2.1.2 Literature Sources

When conducting a literature search in order to discover the relevant evidence, literature sources should be identified. There are a variety of literature sources providing research information in the form of either paper or electronic collections. Searching literature by using the electronic databases is a helpful way of systematically identifying the relevant studies conducted and published. Electronic database searching was considered to be the most suitable method for this study, as it is less time consuming and covers a broad field of knowledge (Macnee & McCabe 2008). It enabled the scanning of a broad range of different journals available on individual databases. The databases were accessed via the university website and provided the

facility to search for journals and publications, enabling a comprehensive and systematic literature search (University of Southampton 2012).

Before beginning a search of the literature, it is important to remember that the process identifies sources relevant to the topic of interest (Burns & Grove 2009). Many university libraries provide access to large numbers of electronic databases, supplying a broad range of available international literature. This allows researchers to identify relevant sources quickly and print out full-text versions of many of these sources (Polit & Beck 2010).

Both health and social care databases and psychological/sociological databases were accessed (Polit & Beck 2010; Boag et al. 2013). The bibliographic databases most searched for this study were: Allied and Complementary Medicine Databases (AMED), Applied Social Sciences Index and Abstracts (ASSIA), Cumulative Index of Nursing and Allied Health Literature (CINAHL), Medical Literature Online (MEDLINE), PsycARTICLES, PsyINFO, Web of Knowledge and The Cochrane Library. Appendix 2.1 shows the reasons for using these electronic databases in this study.

As this study is concerned with training nursery workers in Thailand, Thai databases were used to search in both Thai and English. Appendix 2.2 shows the variety of Thai research databases used. However, many problems were encountered with searching Thai database search engines. For instance, some are not allowed to use Boolean operators or provide full text for downloading. Problems with operational reliability often occurred, such as language restrictions, lack of search facility for related pages and date restrictions. Direct translation of search terms between English and Thai proved problematic, as one Thai word might have several different meanings in English. The Thai language results were frequently different, as Thai academics use different English terms (see Table 2.6). Meanwhile, some engines provide a variety of results in English while others offer very few. Thai search engines do not use static-language detection. There were inconsistent results when limiting years, authors and titles. Logical operators such as Boolean, truncation and wildcards could not be used. In order to solve this problem, the researcher clarified the results by searching several times and saving everything.

Keyword in this study	Synonyms used in Thai databases
Nursery workers	Baby-sitter
	Caretaker
	Childcare centre teacher
	Child-centre attendant
	Child attendant
	<b>Child's carer</b>
	Child caring staff
	Child assistant teacher
	Care provider
	Childcare worker
Childcare centre	Day care centre/day-care centre
	Child development centre
	Children development centre
	Childhood development centre
	Preschool children development centre
	Early childhood development centre
	Early childhood centre
	Prekindergarten school development centre
	Child centre/child care centre
	Pre-school child care centre

Table 2.6: Different English Terms used by Thai Academics

### 2.1.2.1 Grey Literature

The term grey literature refers primarily to papers, reports or other nonconventional documents and ephemeral publications. These include resources such as leaflets, published reports, bulletins, booklets and conference and policy documents, which are not always referenced within a bibliographical system and do not necessarily appear in electronic literature searches (Rumsey 2004; Hek & Moule 2006; Glasper & Rees 2013c). This method was used for this study, but few journal articles were found and there was little published literature available.

### 2.1.2.2 Search by Hand

A search by hand was undertaken of English child development journals and textbooks currently kept at the University Library; the library holds a vast repository of information, much of which is not accessible electronically. Most textbooks have yet to be made available on the internet and many older journal articles are still accessible only in hard-copy form. This also involved searching the internet website, Webcat, by hand in order to find other articles that may have been missed by the electronic search. This method can assist with the discovery of articles that may not be found otherwise.

Furthermore, the process involved researching the reference lists of journal articles that were found in the electronic searches in an attempt to find better evidence to use in the dissertation. This ensured that the best evidence was used, not evidence that was '**second rate**' in comparison with other information available. This method takes time and patience in order to find what is desired, and unfortunately no articles were found in this way.

### 2.1.2.3 Internet Search Engines

Searching on the Internet has positive and negative aspects. There are thousands of search engines available and an overload of information can be produced (Beaven & Craig 2007). Polit and Beck (2010) suggested that Google Scholar can locate information that may otherwise not be found in electronic healthcare databases. Google Scholar is a useful academic database, but its weakness is that it is a citation-driven index, meaning that some uncited papers may not be available. Information gained should, therefore, be considered with caution. Furthermore, this search method is unlikely to provide good, insightful research information. It was helpful when searching for material on certain authors that had been highlighted as important, but no data were found to contribute to the overall literature search of articles.

### 2.1.3 Hierarchy of Evidence

The hierarchy of evidence is known as a significant guidance method to help determine the relative quality of evidence (Burns & Grove 2009; Polit & Beck 2010). A basic hierarchy of the pieces of evidence from the systematic review, based on their relative strength, is organised; the highest level of research is a well-designed randomised controlled trial (RCT), followed by a controlled trial without randomisation, case-control and cohort studies, systemic reviews of descriptive and qualitative studies, single descriptive or qualitative studies and evidence and/or reports of expert opinion (Melnyk & Fineout-Overholt 2005; Hek & Moule 2006).

### 2.1.4 The Results of Systematic Searching

The process of systematic literature review searching commenced in October 2009 and has been updated regularly. The review strategies were carried out with a range of English databases (see Appendix 2.1), formulating and defining terms and setting inclusion and exclusion criteria. Operators (i.e. including '**and**' and '**or**') and **keywords** with an asterisk (\*) were used in this search (see an example search in Appendix 2.4). Appendix 2.5 illustrates the overall results of the English database searches, and Appendix 2.6 shows the combinations of different concepts. Table 2.7 gives the total

final article selection from the English language search; 22 articles were selected for critical appraisal.

Due to the word limitation of this document, this researcher has listed the final 32 articles in Appendix 2.8 for English articles and Appendix 2.9 for Thai theses. In order to appraise and synthesise the research studies, each of the studies was analysed and the key points summarised in tabulated form, including name of author(s), year of publication, country in which study was conducted and methodological issues including sample, design, data collection and findings (see the full overview of all articles in Appendix 2.8-2.9).

Table 2.7 shows the final 22 English studies selected for critical appraisal. A range of studies published between 2000 and 2013, found in the English databases, were reviewed. Those articles originated from various countries: 12 from the US (Draper et al. 2001; Gross et al. 2003; Campbell & Milbourne 2005; Wasik et al. 2006; Cain et al. 2007; Grace et al. 2008; Pianta et al. 2008; Raver et al. 2008; Fuligni et al. 2009; Helker & Ray 2009; Thornton et al. 2009; Fabiano et al. 2013), three from the UK (Rhodes & Hennessy 2000; Whiteley et al. 2005; Potter & Hodgson 2007), two from the Netherlands (Fukkink & Lont 2007; Fukkink & Tavecchio 2010), two from Canada (Girolametto et al. 2003; Girolametto et al. 2004), one from Korea (Lee et al. 2006), one from Australia (Finch et al. 2012) and one from Germany (Perels et al. 2009).

No.	Author(s) (Year) Country	Title	Type/Level/Institute	Database
1	Cain et al. (2007) US	Effects of professional development training on joint attention <b>engagement in low-quality childcare centres.</b>	Early Child Development and Care 177(2): 159-185	Web of Knowledge
2	Campbell and Milbourne (2005) US	Improving the quality of infant-toddler care through professional development.	Topics in Early Childhood Special Education 25(1): 3-14	Web of Knowledge
3	Draper et al. (2001) US	Kinder training: play-based consultation to improve the school adjustment of discouraged kindergarten and first grade students.	International Journal of Play Therapy 10(1): 1-29	PsycINFO
4	Fabiano et al. (2013) US	A comparison of workshop training versus intensive, experiential training for improving behavior support skills in early educators.	Early Childhood Research Quarterly 28(2): 450-460	Web of Knowledge
5	Finch et al. (2012) Australia	Impact of a population based intervention to increase the adoption of multiple physical activity practices in centre based childcare services: a quasi experimental, effectiveness study.	International Journal of Behavioral Nutrition and Physical Activity 9: 101	Web of Knowledge
6	Fukkink and Lont (2007) Netherlands	Does training matter? A meta-analysis and review of caregiver training studies.	Early Childhood Research Quarterly 22: 294-311	Web of Knowledge
7	Fukkink and Tavecchio (2010) Netherlands	Effects of video interaction guidance on early childhood teachers.	Teaching and Teacher Education 26(8): 1652-1659	Web of Knowledge
8	Fuligni et al. (2009) US	Diverse pathways in early childhood professional development: an exploration of early educators in public preschools, private preschools, and family child care homes.	Early Education and Development 20(3): 507-526	Web of Knowledge
9	Girolametto et al. (2003) Canada	Training day care staff to facilitate <b>children's language.</b>	American Journal of Speech-Language Pathology 12(3): 299-311	PsycARTICLES
10	Girolametto et al. (2004) Canada	The effects of verbal support strategies on small-group peer interactions.	Language Speech and Hearing Services in Schools 35(3): 254-268	Web of Knowledge

No.	Author(s) (Year) Country	Title	Type/Level/Institute	Database
11	Grace et al. (2008) US	Impact of professional development on the literacy environments of preschool classrooms.	Journal of Research in Childhood Education 23(1): 52-81	Web of Knowledge
12	Gross et al. (2003) US	Parent training of toddlers in day care in low-income urban communities.	Journal of Consulting and Clinical Psychology 71(2): 261-278	PsycINFO
13	Helker and Ray (2009) US	<b>Impact of child teacher relationship training on teachers' and aides' use of relationship-building skills and the effects on student classroom behavior.</b>	International Journal of Play Therapy 18(2): 70-83	PsycINFO
14	Lee et al. (2006) Korea	<b>Differential effects of kindergarten teacher's beliefs about developmentally appropriate practice on their use of scaffolding following inservice training.</b>	Teaching and Teacher Education 22(7): 935-945	Web of Knowledge
15	Perels et al. (2009) Germany	Improving self-regulated learning of preschool children: Evaluation of training for kindergarten teachers.	British Journal of Educational Psychology 79: 311-327	Web of Knowledge
16	Pianta et al. (2008) US	Effects of web-mediated professional development resources on teacher-child interactions in pre-kindergarten classrooms.	Early Childhood Research Quarterly 23(4): 431-451	Web of Knowledge
17	Potter and Hodgson (2007) UK	Nursery nurses reflect: Sure Start training to enhance adult child interaction.	Reflective Practice 8(4): 497-509	PsycINFO
18	Raver et al. (2008) US	Improving preschool classroom processes: Preliminary findings from a randomized trial implemented in Head Start settings.	Early Childhood Research Quarterly 23(1): 10-26	Web of Knowledge
19	Rhodes and Hennessy (2000) UK	The effects of specialized training on caregivers and children in early-years settings: An evaluation of the foundation course in playgroup practice.	Early Childhood Research Quarterly 15(4): 559-576	Web of Knowledge
20	Thornton et al. (2009) US	<b>The impact of an ongoing professional development programme on prekindergarten teachers' mathematics practices.</b>	Journal of Early Childhood Teacher Education 30(2): 150-161	PsycINFO
21	Wasik et al. (2006)	The effects of a language and literacy intervention on Head	Journal of Educational	PsycINFO

No.	Author(s) (Year) Country	Title	Type/Level/Institute	Database
	US	Start children and teachers.	Psychology 98(1): 63-74	
22	Whiteley et al. (2005) UK	Empowering early years workers to identify and target areas of difficulty in pre-school children.	Early Years 25(2): 155-166	Web of Knowledge

Table 2.7: Final 22 English Studies for Critical Appraisal

In the English databases, there were no relevant studies conducted in Thailand. Because this researcher was concerned with training nursery workers in Thailand, it was necessary to repeat the literature search with Thai databases (see Appendix 2.2).

Figure 2.1 summarises Appendix 2.7, presenting the process of the electronic search strategy for 14 Thai databases.

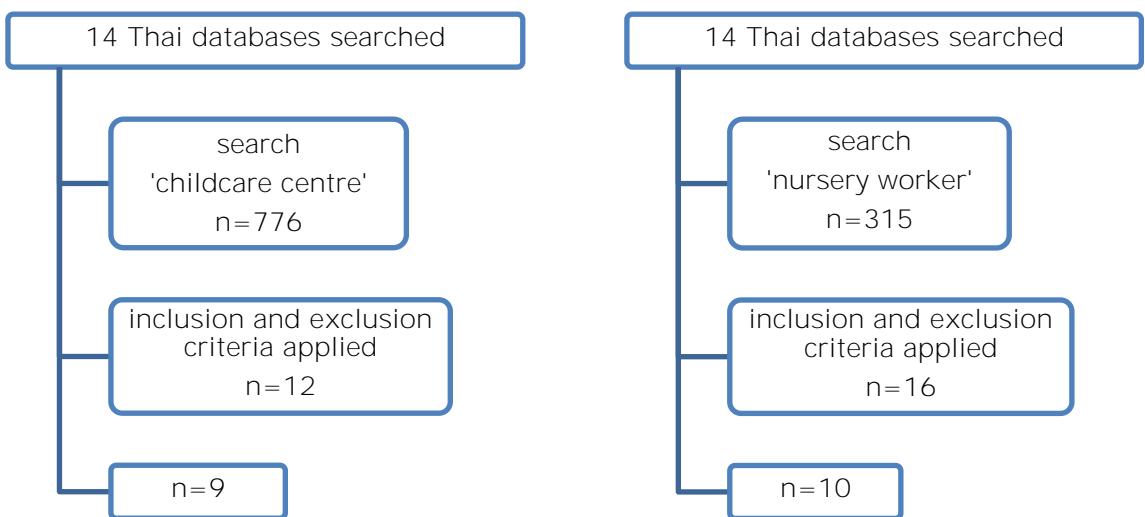


Figure 2.1: The Process of Searching Thai Databases

Table 2.8 shows the final 10 Thai studies selected for critical appraisal. From the Thai databases, a range of studies published between 2003- 2011 were reviewed. Appendix 2.7 presents the process of the electronic search strategy for the 14 Thai databases.

Figure 2.1 summarises Appendix 2.7. Combining the results from both '**childcare centre**' and '**nursery worker**' resulted in the discovery of 10 articles in the Thai databases of adequate quality for critical appraisal. All were theses, from seven different universities; three were Ph.D. dissertations (Neamhom 2006; Nakunsong 2009; Chutchaipolrut 2011) and the others were Masters' theses.

No.	Author (Year)	Title	Type/Level/Institute	Database
1	Chotsuwan (2007)	The effects of organising non-formal education activities to <b>enhance caregivers' performance in child development centres</b> under Sub-District Administrative Organisations in Chantaburi Province.	<b>Thesis/Master's</b> Degree/Chulalongkorn University	Chulalongkorn University Institutional Repository (CUIR)
2	Chutchaipolrut (2011)	Personnel development at Child Development Centre of Banphai Municipality, Khon Kaen Province.	Thesis/Ph.D./Khon Kaen University	Thailand Library Integrated System
3	Kanjanaleaspor ntawee (2010)	The Development of Orientation Training Packages for Child <b>Attendants about 'A Role and Duty of Child Attendants'</b> under the Local Government Organisations in Ban Pong District Ratchaburi Province.	<b>Thesis/Master's</b> Degree/Silpakorn University	Thailand Library Integrated System
4	Nakunsong (2009)	The Development of Training Curriculum for Trainers to Develop the Personnel of Early Childhood Development Centres in Sub-District Administrative Organisations.	Thesis/Ph.D./King Mongkut's University of Technology, North Bangkok University	Thailand Library Integrated System
5	Neamhom (2006)	<b>Process development for the enhancement of teachers' behaviour</b> in promoting pre- <b>schoolers' self</b> -discipline using reflection and internalisation concepts.	Thesis/Ph.D./ Chulalongkorn University	Chulalongkorn University Institutional Repository (CUIR)
6	Nosungnoen (2011)	Developing the potential of the child caretakers of Khoksamran Sub-District <b>Municipality's Child Development Centre</b> , Banhaet District, Khon Kaen Province.	<b>Thesis/Master's</b> Degree/Khon Kaen University	Thailand Library Integrated System
7	Rujisatiensap (2003)	The development of a pre-service caregiver training curriculum for promoting childhood development (0-5 years).	<b>Thesis/Master's</b> Degree/Thammasat University	Thailand Library Integrated System
8	Sala (2010)	Development of experiential learning plans for preschool children for the care providers of Phuphaman Tambon Administrative Organisation Preschool Child Development Centre in Phuphaman District, Chonburi Province.	<b>Thesis/Master's</b> Degree/Khon Kaen University	Thailand Library Integrated System
9	Sompao (2007)	Using group activity to enhance the self-efficacy of child attendants in Preschool Child Development Centre, Mae Rim Sub-District Administrative Organisation, Mae Rim District, Chiang Mai Province.	<b>Thesis/Master's</b> Degree/Chiang Mai University	Chiang Mai University Library

No.	Author (Year)	Title	Type/Level/Institute	Database
10	Uraisawat (2005)	A comparative study of the effectiveness of childcare attendants who attended and did not attend the capacity building for early childhood care and development with participatory approach programme in Bang Pa-In District, Phra Nakhon Si Ayutthaya Province.	<b>Thesis/Master's Degree/Mahidol University</b>	Mahidol University Library and Knowledge Centre

Table 2.8: Final 10 Thai Studies for Critical Appraisal

## 2.2 Critical Appraisal and Synthesis

This section will provide an appraisal of the final selection of articles from the systematic search results. The identification of the critique tools chosen for structural application to each description will be used to justify the choice of literature. The overall purpose of this section is to present the selection of structured appraisal tools for analysing the chosen articles, and discuss whether the evidence is sufficient to answer the research question. Moreover, this section will illustrate gaps in knowledge in this area in order to justify carrying out the study.

A critical review of the **literature is an essential stage in constructing a researcher's** approach and methods for investigating the research question. Craig and Pearson (2007) pointed out that the evidence and knowledge generated can vary according to the research methodologies used. Burns and Grove (2009) commented that the most effective research evidence is empirical knowledge, generated from the synthesis of a variety of quality study findings in order to address a practice problem.

### 2.2.1 What is Critical Appraisal?

Critical appraisal of research refers to an evaluation of all aspects of a research study, critically examining its strengths and weakness in order to ensure the quality of the research (Parahoo 2006; Burns & Grove 2009). Newell and Burnard (2006) described critical appraisal as a systematic examination of research evidence, which can help the researcher to make an informed decision based on relevance, results and validity. Critiques can be broadly described as a critical appraisal of the strengths, weaknesses and limits of a research design and piece of research. These critiques can be used to ascertain whether the findings are accurate, believable and meaningful for clinical practice (Cutcliffe & Ward 2007; Ryan et al. 2007). Essentially, a critical appraisal is an **assessment of limitations, merits and the researcher's ability to communicate their** research problem (Polit & Beck 2010).

Critical appraisal of research is imperative to the development and refinement of nursing knowledge; it is essential that all nurses have the ability to critically appraise research (Burns & Grove 2009). It involves a systematic, unbiased, careful examination of all aspects of a study in order to judge its merits, limitations, meaning and significance. In nursing, professionals are expected to be able to critique and use research in order to enable best practice (Macnee & McCabe 2008) They are also expected to read the latest information, even if they do not carry out the research themselves (Cutcliffe & Ward 2007).

## 2.2.2 Types of Critiquing Tools

Numerous critiquing tools have been developed to support critique in research (Parahoo 2006; Burns & Grove 2009; Walke 2009; Glasper & Rees 2013b). These tools allow both novice and advanced reviewers to critique research studies (Cutcliffe & Ward 2007). They can generally help the reviewer to determine the degree to which the steps in the research process were followed (Ryan et al. 2007). The Critical Appraisal and Skills Programme (CASP) tools were developed by Solution For Public Health (Walke 2009) for use by NHS professionals, and provide a basic series of questions to aid analysis of studies such as case control studies, cohort studies, qualitative studies, randomised controlled trials and systematic reviews. Burns and Grove (2009) suggested that a critique of the research process should include comprehensive, comparative, analytical, evaluative and conceptual clustering in order to conduct a critical appraisal of both quantitative and qualitative research. Parahoo (2006) created a critical appraisal tool by developing a framework with seven headings: title, abstract, literature review, methodology, results, discussion/interpretation and recommendations. This framework is often used for both qualitative and quantitative research, and is suitable for beginners who prefer to be guided through the process step-by-step. Parahoo (2006) also stressed the importance of applying the same critiquing tool to each piece of research in order to ensure consistency and an even application of criteria.

## 2.2.3 Critical Appraisal of Evidence

A tool is recommended so that papers can be reviewed systematically and without bias (Crombie 1996). However, deciding on the most appropriate tool for this particular critical appraisal was problematic. Due to its flexibility in critiquing both qualitative and quantitative evidence, **Parahoo's framework was** utilised in order to complete this process. **The seven sections of Parahoo's** (2006) critiquing tool helped the researcher to break down each article into a series of sections to allow for a thorough analysis. It is a comprehensive and easy-to-use tool (see Appendix 2.10). Appendix 2.11 provides an example of a completed critical appraisal using **Parahoo's** (2006) framework.

There were 32 relevant studies critiqued, as a result of the systematic literature search, which included 22 non-Thai and 10 Thai studies. Interestingly, when the English databases were searched, the results showed that there were articles originating from many countries other than Thailand, and most of them were published in well-known journals. With the Thai databases, meanwhile, the resulting studies were mostly theses from the premier universities in Thailand. Only one had been published – a Ph.D. thesis that was later included in the university journal (Nakunsong et al. 2010). However, reviews of the research studies conducted in Thailand are appropriate and specific for

**the present study because their findings may relate to improving Thai nursery workers' training.**

### 2.2.3.1 Background to the Studies

Cain et al.

The study of Cain et al. (2007) explored joint attention engagement in childcare providers and children from 18 to 24 months of age who were enrolled in 'low-quality' childcare centres, by videotaping social interactions in the classroom including duration and bids for joint attention. One half of the 48 childcare providers were randomly assigned to receive professional development training (PDT) (the Focus-Follow-Talk® technique), designed to increase the frequency of joint attention. Three months after the PDT, following three coaching visits for each subject in the treatment group, 30 minutes of videotape was recorded and coded for each childcare provider in the treatment and control groups.

Significant findings were reported relating to the trained childcare providers on joint attention engagement duration and total bids for joint attention engagement. There was also evidence that supported joint attention subtypes.

Campbell and Milbourne

Campbell and Milbourne (2005) investigated 123 caregivers in 70 classrooms. The onsite consultation involved a three-month training course with a standardised curriculum of five three-hour group classes and an out-of-class project. The results indicated that ongoing professional development can positively impact on teachers' outcomes.

Chotsuwan

Chotsuwan (2007) studied 40 caregivers in child development centres under Sub-District Administrative Organisations in Chantaburi province. This was quasi-experimental research. The non-formal education activities were organisations based on Malcolm S. Knowles' concepts.

The study found that knowledge scores in performance after receiving non-formal education activities designed to enhance caregivers' performance highly increased from the knowledge scores measured prior to the activities.

Chutchaipolrut

Chutchaipolrut (2011) studied the procedures/methods and the outcome of personnel development at a child development centre in Banphai Municipality, Khonkaen

Province. This study found that most nursery workers in Banphai Municipality, as a whole, lack personnel development awareness and knowledge and understanding of the provision of education and experience, the learning experience of children, and suitable learning environments within the childcare centres. This problem was explored using the Appreciation Influence Control (AIC) and four intervention activities: Knowledge Management (KM), Dialogue, Appreciative Inquiry (AI) and Deep Listening. After personnel development training, the results showed that the participants gained knowledge and understanding of how to carry out school development plans, internal quality assurance, clinical supervision, classroom research, integrated learning activities and child-centred learning plans. Moreover, they had developed good attitudes, which helped the teaching and child-centred learning activities to develop. The teaching and learning activities were moving in the same direction, changing for the better. The nursery workers were able to use many different evolution techniques to evaluate both teachers and students. The implementation of this study created three levels of change: personal level, group level and organisational level, all of which contributed to the development of an internal quality assurance system. The CDC planned to develop partnerships and secure the involvement of more stakeholders.

Fabiano et al.

Fabiano et al's (2013) study compared two different training approaches: (1) one-day classroom-based training that introduced effective preventative and behaviour support strategies followed by school year behavioural consultation support; and (2) an intensive package that included the one-day workshop plus four days of experiential learning and practice in a preschool classroom followed by school year behavioural consultation support. 88 teachers/aides were randomly assigned to one of the two training packages, and training occurred in August before the commencement of the school year.

The study investigated effective training and support programmes for early educators, which the authors felt were clearly needed. Results indicated that on observing effective behavioural management and instructional learning formats, teachers in the intensive condition improved proximally, with effects waning over time. For measures of teacher use of praise, the intensive group were more successful at maintaining the improved rate throughout the school year than the workshop group. There was no difference in rates of commands and observations of classroom productivity between groups. Teachers were satisfied with both approaches to training.

Finch et al.

Finch et al. (2012) conducted a quasi-experimental study in centre-based childcare services (n=228) in New South Wales (NSW), Australia; this involved a three-month

intervention to encourage the adoption of eight practices within childcare services that had been suggested to promote child physical activity. Intervention strategies to support the adoption of practices included staff training, resources, incentives, follow-up support and performance monitoring and feedback. Randomly selected childcare services in the remainder of NSW acted as a comparison group (n=164); they did not receive the intervention but may have been exposed to a concurrent NSW government healthy eating and physical activity initiative. Self-reported information on physical activity policies, fundamental movement skills sessions, structured physical activity opportunities, staff involvement in active play and provision of verbal prompts to encourage physical activity, small screen recreation opportunities, sedentary time, and staff trained in physical activity were collected by telephone survey with childcare service managers at baseline and 18 months later.

The study found a significantly greater prevalence of intervention services with a written physical activity policy (with the policy referring to placing limits on small screen recreation) with staff trained in physical activity. In addition, non-significant trends towards a greater increase in the proportion of intervention services conducting daily fundamental movement skill sessions, and such services having a physical activity policy supporting physical activity training for staff, were evident.

The intervention was effective in improving a number of centre-based childcare service policies and practices associated with promoting child physical activity. Adoption of a broader range of practices may require more intensive and prolonged intervention support.

Grace et al.

Grace et al. (2008) employed a longitudinal study to examine the effects of a comprehensive professional development programme on literacy environments in preschool classroom/teacher units. The Early Language & Literacy Classroom Observation Toolkit (ELLCO) was used to assess the effects of treatment; 40 classroom/teacher units, representing 14 preschool centres, participated in the study (treatment group n=20; control group n=20).

Gross et al.

Gross et al. (2003) tested a 12-week parent training programme with parents (n=208) and teachers (n=77) of two to three-year-olds in daycare centres serving low-income families of colour in Chicago. 11 centres were randomly assigned to one of four versions of the programme: (a) parent and teacher training (PT+TT), (b) parent training (PT), (c) teacher training (TT), and (d) waiting list control (C). After controlling for parent stress, PT and PT+TT parents reported higher self-efficacy and less coercive discipline and were observed to have more positive behaviours than C and TT parents.

Among toddlers in high-risk behaviour problem groups, those subject to the experimental conditions showed greater improvement than the controls. Most effects were retained one year later. Benefits were greatest when parents directly received training.

The authors suggested that from a service provision perspective, improvements in **teachers' feelings about their jobs are not trivial: sites struggle with high turnover in low-income preschools**, raising the costs of recruiting, training and supervising replacement staff.

Helker and Ray

Helker and Ray (2009) examined the impact of Child Teacher Relationship Training on **educators' use of relationship-building skills** in the classroom and the effect on student behaviour. Preschool-age children (three to four years old) who scored in the Borderline/Clinical range on at least one scale of the Child Behaviour Checklist Caregiver/Teacher Report Form (C-TRF) qualified for the study (n=32). In this quasi-experimental design, 12 teacher aide dyads (n=24) were assigned to the experimental (n=12) or active control groups (n=12). Using a repeated measures design, results revealed that children in the experimental group (n=19) demonstrated a significant decrease ( $p=0.4$ ) in externalising problems between measurements 1 and 3 compared with children in the active control group (n=13). A statistically significant relationship **was found between educators' higher use of relationship-building skills and students' decrease in externalising behaviours** ( $p< .05$ ).

Kanjanaleasporntawee

Kanjanaleasporntawee (2010) developed orientation training packages for child **attendants themed around 'The role and duty of child attendants'.** After conducting the training with one group, again with pre and post-test design, the 30 **child attendants'** achievement scores were used to develop the orientation training packages. Following this, structured interviews were carried out with the child attendants about the training package.

It was found that the efficiency of the orientation training packages met the efficient standard criterion. The training achievement scores in the experimental group, after practicing with the orientation training packages, were significantly higher than pre-test at the .05 level. Additionally, the child attendants commented favourably about the developed orientation training packages.

Lee et al.

The study by Lee et al. (2006) was designed to ascertain whether Korean teachers self-identified their scaffolding skills as developmentally appropriate practice (DAP) or inappropriate practice (DIP) before and after an in-service training experience. Based on the beliefs of 242 kindergarten teachers, 30 DAP and 30 DIP teachers were selected. 30 (15 DAP, 15 DIP) kindergarten teachers attended the training programme while 30 (15 DAP, 15 DIP) comparison kindergarten teachers did not. Before the **training, there was no significant difference between DAP teachers' scaffolding and DIP teachers' scaffolding. However, DAP teachers made significantly greater gains on a scaffolding measure than DIP teachers following teacher training which provided scaffolding skills and strategies.**

Nakunsong

Nakunsong (2009) employed research and development methodology to construct a training package, employed with 13 trainees. The training package was tried out on one group, with a pre-and post-test design.

The efficiency value of the training package was higher than the required criteria (80/80). When comparing the post-test with the pre-test scores of the trainees, it was found that the post-test scores were higher than the pre-test scores at the .05 level of significance.

Neamhom

Neamhom (2006) developed a process for enhancing teachers' ability to promote **preschoolers' self**-discipline by using reflection and internalisation concepts. Research was conducted via a five-stage method: 1) developing the process, 2) a pilot study, 3) revising the process, 4) field testing, and 5) refining and proposing the developed process with eight preschool teachers (kindergarten) and 207 preschoolers from Phrasamut School, Office of Samutsongkhram Educational Service Area.

Results were provided as follows:

1. The process for the enhancement of teachers' promotion of preschoolers' self-discipline by using reflection and internalisation consisted of foundation concepts, objectives, contents, operational procedures and evaluation of the process. The three stages of operational procedures were: 1) promoting positive relations and trust by engaging with the process voluntarily, respecting teachers, and appearing as a co-learner; 2) providing explicit knowledge of promoting preschoolers' self-discipline by training and using teacher behaviour as a measurement; and 3) transforming explicit knowledge into virtual learning by encouraging teachers' reflection through dialogue

journals and professional conversation, coaching through informal conversation, providing more knowledge as teachers needed and allowing teachers to operate independently. These elements affected teachers' internalisation in three ways: 1) open-minded acceptance, 2) whole-hearted reformation relating to conceptualisation and organisation and 3) responsive attribution.

2. The post-test score for teachers' promotion of preschoolers' self-discipline was measured in four areas: modelling, preparing learning experiences, child rearing and preparing the environment. The scores were significantly higher than that of the pre-test at the .05 level.

3. The post-test score for preschoolers' self-discipline was also measured in four areas: self-control, self-responsibility, public responsibility, and social manner. The performance was again significantly higher than that of the pre-test at the .05 level.

Nosungnoen

Nosungnoen (2011) investigated problems and approaches for developing the potential of child caretakers in the Khoksanran Sub-District Municipality's child development centre in Ban Haet District in Khon Kaen Province. The sample was 13 operational officers who were working at the centre (five executives from the committee, eight child caretakers and 20 parents of children who were studying at the centre) in academic year 2010.

The methods for developing the potential of the child caretakers included organising a workshop for writing lesson plans and producing teaching materials. The research tools used in the study were an interview form, guide questions for a focus group discussion, a comprehension test on writing lesson plans before and after attending the workshop, an evaluation form for lesson plans, an evaluation form for lessons, and a supervision form for organising learning experiences for the child caretakers.

In explaining the results of the problem analysis process regarding problems with developing the potential of child caretakers, it was shown that the learning experience plans of the Department of Local Administration were indeed used but the plans were not adjusted **in accordance with the community's context**. Moreover, the teaching materials were limited. In the operational planning process, the plan for organising the workshop was prepared in order to develop the potential of the child caretakers in terms of writing lesson plans and producing teaching materials.

In the implementation process of the plan, the workshop was organised in order to provide a knowledge and understanding of writing lesson plans and producing teaching materials for the child caretakers. In terms of monitoring and evaluation of the performance of the child caretakers after attending the workshop, the mean of the

test score of the child caretakers after attending the workshop was higher than before attending the workshop, and it was found that a month after attending the workshop, the child caretakers were using a good level of knowledge and understanding derived from the workshop in order to write lesson plans; they also used various kinds of teaching materials/tools and equipment in accordance with the lesson contents, and could teach according to the lesson plans at a good level, nearly 100%.

Perels et al.

The study by Perels et al. (2009) aimed to test the effects of self-regulation training on kindergarten teachers, concerning both their own self-regulation and methods of fostering self-regulation in children. 97 German preschool-age children were studied, alongside the 35 kindergarten teachers who taught them. The kindergarten teachers were tested by a questionnaire two weeks before and after the training. At the same time, the preschoolers were interviewed.

The study showed that both the self-regulation of the kindergarten teachers and the self-regulated learning of preschoolers whose kindergarten teachers took part in the training improved significantly. The results indicated that it is possible to improve self-regulated learning of preschool children by providing a training programme for kindergarten teachers.

Pianta et al.

(Pianta et al. 2008) investigated the My Teaching Partner (MTP) programme, a web-based system of professional development resources, that included video exemplars and web-mediated consultation on specific dimensions of interactions with children. It was demonstrated that teachers who received online consultation and feedback about their teaching practice combined with online videos made significantly more improvement than teachers who were given access to the videos but not the consultation.

The conceptual basis for the MTP approach was that effective professional development for prekindergarten teachers requires extensive opportunities for (a) observation of effective instructional, language and social interactions between teachers and children, through analysis and viewing of multiple video examples based on validated observation tools, and (b) repeated opportunities for individualised feedback and effectiveness-**enhancing support relating to a teacher's own interactions with children** (Wasik et al. 2006).

### Potter and Hodgson

The study by Potter and Hodgson (2007) described a reflective training approach designed to enhance interactions between adults and children in two early-years settings. Within the context of a local Sure Start programme, a speech and language therapist delivered a 12-week course to five nursery nurses, providing extensive opportunities for reflection in and on action through the use of both video clips and work-based support sessions. The training succeeded in increasing reflection within this key area of early-years activity, which in turn resulted in some major changes in practice. Implications for future policy and practice in the field of early years were **examined in relation to children's workforce developments.**

### Raver et al.

Raver et al. (2008) produced a strong research programme, which demonstrated that intensive, sustained professional development programming in behaviour management can produce positive outcomes for early educators as well as children in their classrooms. They demonstrated that an intensive, 30-week professional development intervention (conducted outside of school hours on Saturdays) that included stress reduction and training in behaviour management, coupled with direct intervention with targeted children through consultation, resulted in improved teacher and child behaviours.

It was suggested that teachers make changes in the ways that they run their classrooms when they are given both extensive opportunities for training and **'coaching' support in integrating newly learned skills into their daily routines.** Improving the classroom climate may have benefits for both teachers and children.

### Rujisatiensap

Rujisatiensap (2003) studied the development of the pre-service caregiver training curriculum for promoting childhood development (birth to five years). The aim was to develop this curriculum, which was aimed at caregivers in private low-charge daycare services, and to study the views of such caregivers towards the implementation of the curriculum. A survey of caregivers from services registered with the Department of Social Development and Welfare (Department of Public Welfare) was conducted. Methodologies included documentation, interviews and questionnaires with 15 key players (childcare experts, lecturers and academics) and 13 caregivers in private low-charge daycare services in Bangkok.

The study found that the pre-service caregiver training curriculum was divided into 14 categories: role of childcare service, emotional quotient of caregivers, developmental psychology, assessment of preschool-aged child development, instilling discipline and

morals, providing the experience of familiarisation, activity arrangement, pre-aged **children's playing, learning** media, material provision, toy-making and repairing, arranging environments, food and nutrition, illness and accident prevention, child development policy, basic laws and legal aspects. The 300-hour training involved creating an awareness of being caregivers, theoretical study and field practice. According to academics, the curriculum was compiled with pre-**aged children's** development in mind. Furthermore, the caregivers in the private low-charge day-care agreed that this curriculum was highly applicable to daily practice.

Additionally, it was recommended that pre-service training should be done continuously with periodic improvement of the course. During training, the example given or explanations of the method or model should be varied for the trainee in practice; such as approach to family and community. In addition, the training should provide opportunities for the caregiver to survey the learning sources in the community accompanied by consultations with academics from time to time until the caregivers can familiarise and gain benefits from sources in order to provide further experience for children.

#### Sala

Sala (2010) aimed to improve the capacity of preschool teachers to create development experiences for preschoolers in early childhood development centres under the management of the Phuphaman TAO in Phuphaman District, Khon Kaen Province. Methods included working meetings, allocation of tasks, supervision, observation and personal interviews with eight childcare providers from child development centres.

The study found that, prior to the working meetings, preschool teachers were aware of experiential development learning, but lacked knowledge in conducting specific experiential learning activities, and this resulted in gaps in the learning process. However, after the working meetings, it was found that teachers had increased knowledge and understanding of specific methods of experiential learning development. Using development methods to increase the knowledge of preschool teachers from child development centres under the TAO, including working meetings and delegation of tasks and supervision, resulted in improved knowledge among the teachers. The teachers also demonstrated an improved ability to plan the schedule efficiently and an array of experiential development learning activities. This will help all students to maximise their learning potential.

It was recommended that these development methods be implemented in a sincere and determined way. This would help elevate the capacity and effectiveness of child development centres. There should be a review of the training curriculum on a regular basis. There should also be control and monitoring of plans for experiential

development for preschoolers in child development centres, and development of data on preschool experiential learning that is appropriate and up-to-date so that this information can be disseminated to those who are interested and want to apply the methods described in the study.

#### Sompao

Sompao (2007) conducted one-group pre- and post-test experimental research in order to study the effect of using group activity on the self-efficacy of child attendants in a preschool child development centre run by Mae Ram Sub-District Administrative Organisation, Mae Rim District, Chiang Mai Province. The attendants participated in group process activities for two days. The instruments used included 12 activities for developing self-efficacy and a self-efficacy test.

#### Thornton et al.

Thornton et al. (2009) provided appropriate mathematics-related materials for children and facilitated their use in the classroom so that early childhood educators would be adequately prepared. After participating in an ongoing professional development programme that specifically targeted teachers of prekindergarten children in public schools, Preschool Programs for Children with Disabilities (PPCD), Head Start and childcare settings, teachers reported positive changes in maths practices. In particular, they reported a stronger alignment with national mathematics standards and increased awareness pertaining to developmentally appropriate mathematics practices as applied to early childhood classrooms. They also reported a shift towards more hands-on activities and away from the use of worksheets in their prekindergarten classrooms. The implication of this study was that ongoing professional development, designed to meet the specific needs of early childhood educators, can have a positive impact on reported mathematics content knowledge and instructional practices.

#### Uraisawat

Uraisawat (2005) measured knowledge, attitudes, practices and teaching skill between an experiment group ( $n=3$ ) and control group ( $n=3$ ) at three points in time: pre-test, post-test and follow-up test eight months after training.

It was shown that the participants who attended capacity building in-service training had higher knowledge, attitudes, practice and teaching skills, as shown by their mean scores.

It was **suggested that young children's growth and development could be improved** significantly if childcare attendants received appropriate participatory in-service

training. More advocacy and social mobilisation are needed to increase awareness and support from parents and community leaders.

Wasik et al.

Wasik et al. (2006) focused on prekindergarten teacher-child interactions and how **these teachers' professional development is based** on the literature in early literacy instruction. There is growing evidence that prekindergarten teachers require focused training in order to improve their knowledge about high-priority skill targets in language and literacy development that can be the focus of their classroom interactions with children, either in formal or informal instructional activities. It is also clear that despite the availability of and training in use of evidence-based curricula, early childhood educators are under-trained in how to implement these curricula through early literacy instructional activities and in how to engage in interactions and conversations that promote language skills.

Whiteley et al.

Whiteley et al. (2005) reported on a project aimed at providing skills and resources for supporting nursery staff in identifying areas of strength and needs in three to five-year-old children. All six participating nurseries were in areas of high socioeconomic disadvantage. Staff were trained to administer, score and interpret a wide-ranging screening inventory. Following the assessment of children at nursery entry, support was given to staff in developing appropriate programmes of activities to address the weaknesses and build on the strengths identified in individual children. All the children were reassessed following a period of six months. Although time was a major issue, staff were generally positive about the screening process and recognised the worth of early identification and intervention. While 46% of the 173 children screened at the start of the project had significant difficulties in some area of development, only 6.9% remained at risk on the screening measure following tailored input. Systematic screening was identified as important for alerting staff to difficulties that might otherwise go unnoticed.

### 2.2.3.2 Title of Study

The title of an article is the first thing seen by the reader, and needs to attract their attention and encourage them to continue reading. It has to give a brief but thorough explanation of the study, by which the reader can determine its relevance. It should be clear and accurate, and reflect the purpose of the study (Conkin 2005). Moreover, it should not be long and complicated as this could be confusing or misleading (Parahoo 2006).

An examination of the 32 articles' titles show that there is only one article that used the initial question as its title (Fukkink & Lont 2007). Other articles presented research methods, a quasi-experiment (Finch et al. 2012), a meta-analysis (Fukkink & Lont 2007), and a randomised trial (Raver et al. 2008). All articles used their titles to tell the reader about their populations.

A subset of keywords were provided by the titles: professional development training (Campbell & Milbourne 2005; Uraisawat 2005; Neamhom 2006; Cain et al. 2007; Chotsuwan 2007; Grace et al. 2008; Pianta et al. 2008; Fuligni et al. 2009; Nakunsong 2009; Thornton et al. 2009; Kanjanaleasporntawee 2010; Sala 2010; Chutchaipolrut 2011; Nosungnoen 2011), Sure Start training (Potter & Hodgson 2007), Head Start setting (Wasik et al. 2006; Raver et al. 2008), Kinder training (Draper et al. 2001), workshop training (Fabiano et al. 2013), group training/group activity (Campbell & Milbourne 2005; Sompao 2007), in-service training (Lee et al. 2006), pre-service training (Rujisatiensap 2003), enhancing teacher-child interaction/relationship-building skills (Potter & Hodgson 2007; Pianta et al. 2008; Helker & Ray 2009), improving self-regulated learning of preschool children (Perels et al. 2009), improving self-efficacy of childcare attendants (Sompao 2007), improving the quality of childcare (Gross et al. 2003; Campbell & Milbourne 2005; Whiteley et al. 2005; Cain et al. 2007), improving behaviour support skills (Neamhom 2006; Helker & Ray 2009; Fabiano et al. 2013), play-based (Rhodes & Hennessy 2000; Draper et al. 2001), multiple physical activity practice (Finch et al. 2012), video interaction guidance (Fukkink & Tavecchio 2010), web-mediated resources (Pianta et al. 2008), children's **language** (Girolametto et al. 2003; Girolametto et al. 2004; Wasik et al. 2006), literacy environment (Grace et al. 2008) and mathematics practice (Thornton et al. 2009).

### 2.2.3.3 Abstract

The abstract should expand on the information and give an overview (Bassett & Bassett 2003). It should provide a clear summary of the research and include information regarding the purpose of the study, method, sample size and selection, the main findings and conclusions and practice implications which may include either a qualitative or quantitative approach, or a combination of both (Conkin 2005; Parahoo 2006). Within a few hundred words the reader should be able to distinguish whether the article is of interest and significance to continue reading (Polit & Beck 2010). Parahoo (2006) highlighted that the reader should be able to determine whether the study is of interest, relevant to practice and worth reading the entire article.

The 32 abstracts summarised the purpose of their study very concisely and gave details of each section of the study. Almost all stated the purpose of the study within their opening abstract. Fuligni et al. (2009) provided an abstract with research findings.

Eight of the abstracts addressed some background information (Wasik et al. 2006; Potter & Hodgson 2007; Grace et al. 2008; Pianta et al. 2008; Perels et al. 2009; Thornton et al. 2009; Finch et al. 2012; Fabiano et al. 2013).

Four abstracts showed how data were collected from previous relevant studies (Girolametto et al. 2003; Girolametto et al. 2004; Fukkink & Lont 2007; Fukkink & Tavecchio 2010).

The population in most abstracts were nursery workers or teachers involved in early childhood care. Two articles assessed child development progress (Whiteley et al. 2005; Finch et al. 2012). One article compared parent and preschool teacher training (Gross et al. 2003). Others discussed teachers working in public, private and family childcare (Fuligni et al. 2009).

10 of the Thai theses provided a clear summary of the research regarding the purpose of the study, method, sample size and selection, the main findings and the conclusions (Rujisatiensap 2003; Uraisawat 2005; Neamhom 2006; Chotsuwan 2007; Sompao 2007; Nakunsong 2009; Kanjanaleasporntawee 2010; Sala 2010; Chutchaipolrut 2011; Nosungnoen 2011).

#### 2.2.3.4 Literature Review/Background

A literature review is a process by which authors are able to summarise previous work on the topic, identify gaps in knowledge and orientate the reader to the area of research and the arguments surrounding the issue. The review of literature should be comprehensive but concise. When presenting previous work, it is important that the data is reviewed critically, highlighting both the strengths and limitations of the study. It should also be compared and contrasted with the findings of other studies. It should also help to identify any gaps in the literature relating to the problem and to suggest how those gaps might be filled (Burns & Grove 2009; Polit & Beck 2010). Only premier, primary and up-to-date sources (less than five years old) should be used in the article. Sources should be drawn from a wide range of scientific literature. The background or review of literature section should justify the purpose of the study and provide a sound theoretical framework for the research (Conkin 2005). The literature reviews of the articles under critique varied in quality and length. Parahoo (2006) suggested that a literature review be able to provide a rationale as to why a piece of work is important and what they are aiming to achieve by undertaking a project. It is vital that literature reviews explain all concepts appropriately in order to produce an in-depth analysis.

All the authors of the English articles were generally able to explain all their terms appropriately and to distribute information in a clear manner. One of the 10 Thai

theses was published in the English language in order to disseminate the findings more easily to international readers (Uraisawat 2005).

### 2.2.3.5 Methodology or Design

A methods section is vital for a study to accurately describe the design and illustrate the trustworthiness of the results. This section is where the researcher explains the process, implementation, participants, setting and procedures for collecting information (Macnee & McCabe 2008). The researcher should specify which of the various research approaches were adopted in the study and how controls were implemented to enhance the interpretability of the results (Polit & Beck 2010). The instruments used should be fully described, including reliability and validity, and it should be stated whether the tool was developed by the researcher and/or previously tested. The instruments should match the variables being studied. The reader should be able to determine whether the instruments accomplished what the researcher intended (Bassett & Bassett 2003). This section plays an important role in helping the reader determine the validity of the study findings. The sample and setting should be described in enough detail for the reader to determine whether the subjects and setting are similar to his/her own patients and practice setting. Many publications require that ethical considerations be discussed (Conkin 2005).

The majority of these studies utilised quantitative data collection methods. There are four main types of research: descriptive, experimental/quasi-experimental, action research and meta-analysis.

19 of the studies employed two-group design (a pre-and post-test design) involving a quasi-experimental group and control group or a treatment and comparison group (Draper et al. 2001; Girolametto et al. 2003; Gross et al. 2003; Girolametto et al. 2004; Campbell & Milbourne 2005; Uraisawat 2005; Whiteley et al. 2005; Lee et al. 2006; Wasik et al. 2006; Cain et al. 2007; Chotsuwan 2007; Grace et al. 2008; Pianta et al. 2008; Raver et al. 2008; Helker & Ray 2009; Perels et al. 2009; Thornton et al. 2009; Fukkink & Tavecchio 2010; Finch et al. 2012). Three of the studies used one-group design with a pre-test and post-test (Sompao 2007; Nakunsong 2009; Kanjanaleasporntawee 2010). One study was based on Participatory Action Research (PAR). Thornton et al. (2009) and Ruijsatiensap (2003) both conducted survey research which included documentaries, interviews and questionnaires.

Fukkink and Tavecchio (2010) measured three points in time: pre-test, post-test and follow-up test three months after the training (retention). The studies by Girolametto et al. (2003) and (Girolametto et al. 2004) had similar designs. Raver et al. (2008) conducted an experimental design: a clustered randomised controlled trial (RCT) design. Sompao (2007) used the concept of group activity to enhance the self-efficacy

of child attendants based on self-efficacy's **Bandura**. Nakunsong (2009) employed a CIPP model to assess the efficiency of the curriculum. Uraisawat (2005) developed a training programme by integrating several disciplines concerning early child development and human development more widely.

### 2.2.3.6 Results

A results section of a study presents the outcomes and significance of the analysed data (Burns & Grove 2009). **The results should lead the reader toward the researcher's conclusions.** In this section, the data should be presented objectively (Conkin 2005). This is usually given in summary due to the limited space available to describe all the information. Data is highlighted in categories or themes. The percentage of the sample who participated in the study is an important element in ascertaining the generalisability of the results. At least 50% of the sample is required to participate if a response bias is to be avoided (Polit & Beck 2010).

A broad scope and introductory nature appeared as a dominant characteristic of the curriculum of many of the evaluated training programmes; as such, it is less clear which results can be expected from programmes at a more advanced level or with a narrow focus (Girolametto et al. 2003; Girolametto et al. 2004).

One serious limitation is that many of the experimental studies that have been conducted primarily concern broad, introductory programmes that address various aspects of childcare practice. Experimental research into specialised training programmes that focus exclusively on stimulating teacher-child interaction is relatively scarce.

Furthermore, previous experimental studies of interventions that have focused on altering early childhood teacher behaviour are characterised by their relatively small scale, including only a fairly small number of trained participants (Girolametto et al. 2003; Girolametto et al. 2004). The studies of Girolametto et al. (2003) and Girolametto et al. (2004) were exceptions, as they involved training tailored to the teaching of five concrete interaction strategies within the domain of language development.

In terms of research into formal education, Fuligni et al. (2009) showed a wide diversity of pathways in early childhood professional development, varying from no formal education to bachelor level with specialised courses in childhood development or early childhood education. However, there is an increasing awareness that specialised training after initial vocational training at various levels (e.g., associate degree or bachelor degree) can improve the quality of teacher-child interactions.

Experimental research has provided further confirmation of the relationship between the training of early childhood teachers and teaching quality.

In their recent meta-analysis, Fukkink and Lont (2007) reported positive effects of caregiver training on interaction and teaching skills. Specialised training enhances the competencies of early childhood teachers, including their vocational knowledge of teachers, their professional attitude and their caregiving skills. However, various questions still need to be answered regarding specialised training in early childhood education and care (ECEC). Several authors have noted that the experimental knowledge base is still limited and that empirical research is needed to establish an evidence-based practice for the training of early childhood teachers (Fukkink & Lont 2007).

Other experimental studies have previously reported positive results from video feedback training of early childhood teachers (Girolametto et al. 2003; Girolametto et al. 2004).

In studying the causal link between training, caregiver competencies and child characteristics, Rhodes and Hennessy (2000) found that the caregivers in their study **were able to intensify children's play after training. The results from Girolametto et al. (2003) showed a dramatic increase in children's language production. The study by (Girolametto et al. 2004) had mixed results at the child level, which highlights an interesting aspect of caregiver training.**

Draper et al. (2001) showed that as a result of play sessions, the teacher-student relationship was enhanced, the students felt more encouraged in the classroom, and the teachers transferred the newly obtained skills to their work with other students. This transfer included an increase in facilitative statements, encouragement and limit-setting. Additionally, the teachers decreased the number of praise statements and ineffective limit-setting. The result of this review could be generalised to caregivers with different educational levels, varying from high school to bachelor and graduate level (Girolametto et al. 2003) and to caregivers in different settings, including centre-based care (Girolametto et al. 2004) and play groups (Rhodes & Hennessy 2000; Draper et al. 2001).

Wasik et al. (2006) showed that teachers in the intervention classrooms used strategies that promoted language development during book reading and other classroom activities. Head Start teachers can thus be trained to implement strategies that have positive effects on children's language and literacy development.

**Few studies have assessed the impact of training on participants' implementation of targeted training content in work settings. Evidence that causal links exist between**

**caregiver training and positive effects on children's behaviours is still uncertain,** however, some studies have at least suggested that the link exists (Rhodes & Hennessy 2000; Girolametto et al. 2003).

Sompao (2007) found that self-efficacy of child attendants increased, though insignificantly, after participating in a group activity. Sala (2010) and Nosungnoen (2011) both found that following workshops and supervision, preschool staff had more knowledge and understanding of how to write a lesson plan and organise provision of an integrated experience.

### 2.2.3.7 Discussion and Interpretation of Results

The purpose of a discussion section is to draw conclusions about the meaning and implication of the results, and reflect on the implementation of the findings in practice. The recommendations for future practice and research may also be elaborated on further (Macnee & McCabe 2008). Interpreting the findings in the context of the study and direct relation to the participants is important in order to ensure that the meaning is justified and the research valid (Parahoo 2006).

In all 32 studies, this was the case. The findings were discussed in the context of trained preschool staff in the early-years setting. It is also important in a discussion section that the flaws and limitations of the study are recognised, which was again achieved by all the studies.

Fabiano et al. (2013) emphasised that effective behaviour support is an important component of high-quality and nurturing early childhood classroom settings. There are only a few studies that investigated the best way to train and support teachers in these strategies (Fukkink & Lont 2007; Pianta et al. 2008; Raver et al. 2008; Fukkink & Tavecchio 2010).

Pianta et al. (2008) worked with teachers throughout the entire school year in an intensive web-based professional development programme. This investigation suggested that more directive and prescribed coaching may be necessary to promote the maintenance of positive outcomes. Thus, there may be benefits to a proscribed and ongoing maintenance or booster training approach that follows the initial intensive training (Pianta et al. 2008). Alternative approaches may be needed, as these areas may be more complex and thus require multiple skills working in concert; as a result, they may be more difficult for educators to implement consistently over time (Fukkink & Lont 2007; Fukkink & Tavecchio 2010)

Fukkink and Lont (2007) suggested that large-scale programmes designed for a variety of training formats and learners are not highly effective. The influence of the identified factors is significant. The effects of caregiver training do not simply decrease

with each identified factor; they disappear. Additionally, the interventions are not equally effective in all domains. Learning gains appeared somewhat larger for the attitude domain, compared to the skills and knowledge domain. This result is difficult to explain. A possible explanation is that attitudinal changes may precede behavioural changes, which require a longer period of training. In addition, some of the programmes were relatively brief. A different, more critical explanation is that the post-test scores for attitudinal measures may reflect, at least partially, a tendency of **trainees to ‘match’ their responses to the content of** the training they have just completed. In this case, attitude measures may be biased to some extent for the intervention group and may overestimate their attitudinal change after the training.

### 2.2.3.8 Conclusions/Recommendations

Implications for practice and future research should be presented in the concluding section. At this point, the reader can question whether the findings advance knowledge in the discipline and identify additional questions to answer related to the topic. This section should also describe what else needs to be done before the findings can be generalised to other situations (Conkin 2005).

Across these studies, effective professional development approaches included training on specific skills, active learning through practice, and mechanisms for follow-ups and consultation following the introduction of professional development content, suggesting that these are all important components in training.

Fabiano et al. (2013) mentioned that there are a number of limitations in the research literature related to early **childhood teachers’ professional development in the area of** classroom behaviour support. First, there are relatively few randomised, controlled trials that compare two approaches to one another. Fukkink and Lont (2007) were only able to identify four randomised trials in their exhaustive literature review of early childhood professional development approaches. It is also important to acknowledge that few professional development approaches are effective without ongoing consultation, mentoring, or coaching (Pianta et al. 2008). Thus, consultation or coaching approaches that promote the maintenance and application of strategies taught in professional development will typically be required. Finally, studies of professional development have to move toward evaluation approaches that document the sustainability and long-term outcomes that result from training (Fabiano et al. 2013).

Future studies might investigate this approach to support the development of other skills (e.g. use of instructional strategies) or determine how to integrate it into centre-based training plans. As Fabiano et al. (2013) noted in their limitations, it was not possible to investigate training outcomes separately for teachers versus assistants.

There is a need to investigate the impact of professional development approaches for lead teachers, as well as assistant teachers, as all have behaviour management responsibilities in early education classrooms (Fabiano et al. 2013).

**Future studies should also investigate ways to promote teachers' use of these** consultation resources, either through systematic progress monitoring by supervisors or through other mechanisms, for example online learning and videotape review (Pianta et al. 2008; Fukkink & Tavecchio 2010; Kanjanaleasporntawee 2010).

Further exploration of the attitudinal effects of specialised teacher training would be useful. It is likely that this line of study would profit from selecting validated measures closely related to the content of the training. An interesting candidate in this respect is the notion of whether specialised training focusing on interactional skills increases the perceived efficacy of ECEC teachers in providing stimulating care. Other future studies may explore whether interventions with a specific focus on improving teachers' job satisfaction are effective. Taking into account the high job satisfaction levels of the majority of ECEC teachers, it would be prudent to focus on teachers with relatively low job satisfaction levels (Fukkink & Tavecchio 2010).

Providing training to all staff in a service by incorporating training as a mandatory component of staff induction, the inclusion of refresher training in annual staff development opportunities and increased emphasis on knowledge and attitudes as well as skills may represent an opportunity for improving the long term impact of such implementation initiatives without placing additional time demands on staff (Fukkink & Lont 2007).

The relatively modest role of caregiver training in early childhood education in different countries and the positive effects of training suggest that significant gains in the quality of teacher-child interaction can be realised in childcare practice (Kanjanaleasporntawee 2010).

## 2.3 Analytical Review of Studies on Child Caregiver Training

In order to identify gaps in child caregiver training, leading to the development of a training programme for play that would eventually result in child development, the researcher performed an analytical review of the studies on child caregiver training. For ease of reading, the review findings are summarised in Tables 2.9 and 2.10 and Appendices 2.8 and 2.9.

No	Author(s) (Year) Country	Child Development Focus(es)							Total
		Social development	Physical development	Emotional development	Creative development	Cognitive or Intellectual development	Self-esteem, Self-discipline or Autonomous development	Language development	
1	Cain et al. (2007) US	✓	✗	✓	✓	✓	✗	✓	5
2	Campbell and Milbourne (2005) US	✓	✓	✓	✗	✓	✗	✓	5
3	Draper et al. (2001) US	✓	✓	✓	✗	✗	✓	✓	5
4	Fabiano et al. (2013) US	✓	✓	✗	✗	✓	✓	✓	5
5	Finch et al. (2012) Australia	✗	✓	✗	✗	✗	✗	✗	1
6	Fukkink and Lont (2007) Netherlands	Meta-analysis							
7	Fukkink and Tavecchio (2010) Netherlands	✗	✗	✗	✗	✗	✗	✗	0
8	Fuligni et al. (2009) US	✗	✗	✗	✗	✗	✗	✓	1
9	Girolametto et al. (2003) Canada	✓	✗	✗	✗	✗	✗	✓	2
10	Girolametto et al. (2004) Canada	✓	✗	✗	✗	✓	✗	✓	3
11	Grace et al. (2008) US	✗	✗	✗	✗	✓	✗	✓	2
12	Gross et al. (2003) US	✓	✓	✓	✗	✗	✗	✓	4
13	Helker and Ray (2009) US	✓	✗	✓	✗	✗	✓	✓	4

No	Author(s) (Year) Country	Child Development Focus(es)							Total
		Social development	Physical development	Emotional development	Creative development	Cognitive or Intellectual development	Self-esteem, Self-discipline or Autonomous development	Language development	
14	Lee et al. (2006) Korea	×	×	×	×	×	×	×	0
15	Perels et al. (2009) Germany	×	×	×	×	✓	×	×	1
16	Pianta et al. (2008) US	✓	×	✓	×	×	×	✓	3
17	Potter and Hodgson (2007) UK	×	×	×	×	×	×	✓	1
18	Raver et al. (2008) US	×	×	✓	×	×	×	×	1
19	Rhodes and Hennessy (2000) UK	✓	✓	×	×	✓	×	×	3
20	Thornton et al. (2009) US	✓	×	×	×	×	×	✓	2
21	Wasik et al. (2006) US	×	×	×	×	×	×	✓	1
22	Whiteley et al. (2005) UK	×	✓	×	×	✓	×	✓	3
23	Chotsuwan (2007) Thailand	NA (Lesson plan development, production of learning media and teaching/learning methods)							NA
24	Chutchaiplorut (2011) Thailand	NA (Process of child caregiver development)							NA
25	Kanjanaleasporntawee (2010) Thailand	NA (Curriculum development for child caregivers)							NA
26	Nakunsong (2009) Thailand	NA (Curriculum development for child caregivers)							NA

No	Author(s) (Year) Country	Child Development Focus(es)							Total
		Social development	Physical development	Emotional development	Creative development	Cognitive or Intellectual development	Self-esteem, Self-discipline or Autonomous development	Language development	
27	Neamhom (2006) Thailand	×	×	×	×	×	✓	×	1
28	Nosungnoen (2011) Thailand	NA (Lesson plan development, production of learning media and teaching/learning methods)							NA
29	Rujisatiensap (2003) Thailand	NA (Curriculum development for child caregivers)							NA
30	Sala (2010) Thailand	NA (Lesson plan development, production of learning media and teaching/learning methods)							NA
31	Sompao (2007) Thailand	NA (Caregivers' confidence in caregiving)							NA
32	Uraisawat (2005) Thailand	NA (Growth, nutrition and general management)							NA
Total		11	7	7	1	8	4	15	

Table 2.9: Summary of literature review on child caregivers' training according to areas of child development

### 2.3.1 Areas of child development addressed by the studies on child caregiver training

Table 2.9 summarises the areas of child development addressed by the reviewed studies on child caregiver training (N = 32, International = 22, Thai = 10). Out of 22 international studies, one study (Fukkink & Lont 2007) was a meta-analysis of child **caregivers' training. The other two studies** (Potter & Hodgson 2007; Fuligni et al. 2009) addressed child caregiving styles.

Three Thai studies (Rujisatiensap 2003; Nakunsong 2009; Kanjanaleasporntawee 2010) focused on curriculum development for child caregivers. A further three studies from Thailand focused on lesson plan development, production of learning media and teaching/learning methods (Chotsuwan 2007; Sala 2010; Nosungnoen 2011). The **other Thai studies focused on caregivers' confidence in caregiving** (Sompao 2007), the process of child caregiver development (Chutchaipolrut 2011) and growth, nutrition and general management (Uraisawat 2005). Unfortunately, only one Thai study (Neamhom 2006) identified child development (i.e. self-discipline) as the ultimate goal of the training.

The researcher identified seven areas from the studies that directly or indirectly addressed child development (N = 20; International = 19; Thai = 1). These areas were social, physical, emotional, creative, cognitive/intellectual, autonomy/self-esteem/self-discipline and language development. Language was the most common area of child development addressed by the studies on child caregiver training; it was addressed in 15 out of 20 studies. Creative development was, on the other hand, addressed in only one study (Cain et al. 2007) - making it the least common area of child development addressed by child caregiver training studies. Social, intellectual, physical, emotional and autonomy development were addressed in 11, eight, seven, seven and four studies respectively.

Four of the studies addressed five areas of child development, while two studies addressed four areas of child development. Seven studies addressed two to three child development areas. Seven studies addressed only one aspect of child development, including the single Thai study, which only addressed self-discipline or autonomy.

No	Author(s) (Year) Country	Training Methods						Outcomes and Evaluation Techniques									Child development
		Fixed content	Flexible activities	One site	Media	Duration	Theory	Caregivers' outcomes						Behaviours			Children's outcomes
								Behaviours			Knowledge or Attitudes						
1	Cain et al. (2007) US	✓	✓	✓	✓	Four hours of training	Not stated*	✓	✗	✗	✗	✗	✗	✓	✗	✗	✗
2	Campbell and Milbourne (2005) US	✓	✓	✓	✓	15 hours of training (one session per three hours)	Knowles' theory of andragogy (adult learning)	✗	✓	✗	✗	✗	✗	✓	✗	✗	✗
3	Draper et al. (2001) US	✓	✓	✓	✓	Six weeks of training	Not stated*	✗	✓	✗	✗	✗	✗	✓	✗	✗	✓
4	Fabiano et al. (2013) US	✓	✓	✓	✓	One-day workshop	Not stated*	✗	✓	✗	✗	✗	✗	✓	✗	✗	✗
5	Finch et al. (2012) Australia	✓	✓	✓	✓	A three-month intervention	Not stated*	✗	✗	✓	✗	✗	✗	✓	✗	✗	✗
6	Fukkink and Lont (2007) Netherlands	Meta-analysis															
7	Fukkink and Tavecchio (2010) Netherlands	✓	✓	✓	✓	Not stated	Not stated*	✓	✗	✗	✗	✗	✗	✓	✗	✗	✗
8	Fuligni et al. (2009) US	✗	✗	✗	✗	An academic year	Not stated*	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗

No	Author(s) (Year) Country	Training Methods						Outcomes and Evaluation Techniques									Child development	
		Fixed content	Flexible activities	One site	Media	Duration	Theory	Caregivers' outcomes							Children's outcomes			
								Behaviours				Knowledge or Attitudes						
								Videotaped	Direct Observation	Telephone interview	Interview	Focus group	Diary	Rating scale	Test	Survey		
9	Girolametto et al. (2003) Canada	✓	✓	✓	✓	14-week programme	Not stated*	✓	✗	✗	✗	✗	✗	✓	✗	✗	✗	
10	Girolametto et al. (2004) Canada	✓	✓	✓	✓	Six-week programme	Not stated*	✓	✗	✗	✗	✗	✗	✓	✗	✗	✗	
11	Grace et al. (2008) US	✓	✓	✓	✓	Not stated	Not stated*	✓	✗	✗	✗	✗	✗	✗	✗	✗	✓	
12	Gross et al. (2003) US	✓	✓	✓	✓	12-week parent training programme	Not stated*	✓	✗	✗	✗	✗	✗	✓	✓	✗	✗	
13	Helker and Ray (2009) US	✓	✓	✓	✓	Phase I = 21/2 days Phase II = 10 weeks	Not stated*	✓	✗	✗	✗	✗	✗	✓	✗	✗	✗	
14	Lee et al. (2006) Korea	✓	✓	✓	✓	One-month teacher training course	Not stated*	✓	✗	✗	✗	✗	✗	✓	✗	✗	✗	
15	Perels et al. (2009) Germany	✓	✓	✓	✓	15 hours of training (three hours per	Self-regulation	✗	✓	✗	✓	✗	✓	✓	✗	✗	✗	

No	Author(s) (Year) Country	Training Methods					Outcomes and Evaluation Techniques									Child development	
		Fixed content	Flexible activities	One site	Media	Duration	Theory	Caregivers' outcomes									
								Videotaped	Direct Observation	Telephone Interview	Interview	Focus group	Diary	Rating scale	Test	Survey	
						week for five weeks)											
16	Pianta et al. (2008) US	✓	✓	✓	✓	An academic year, August 2004 - June 2005	Not stated*	✓	✗	✗	✓	✗	✗	✗	✗	✗	✗
17	Potter and Hodgson (2007) UK	✗	✗	✗	✗	Two hours of teaching per session; total of 12 sessions	Not stated*	✓	✗	✗	✓	✓	✗	✗	✗	✗	✗
18	Raver et al. (2008) US	✓	✓	✓	✓	Cohort 1 = Autumn to Spring 2004/2005 Cohort 2 = Autumn to Spring 2005/2006	Not stated*	✗	✓	✗	✗	✗	✗	✓	✗	✗	✗
19	Rhodes and Hennessy (2000) UK	✓	✓	✓	✓	120 hours of training	Not stated*	✗	✓	✗	✗	✗	✗	✓	✗	✗	✓
20	Thornton et al. (2009) US	✓	✓	✓	✓	One-and-a-half day	Not stated*	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗

No	Author(s) (Year) Country	Training Methods					Outcomes and Evaluation Techniques									Child development		
		Fixed content	Flexible activities	One site	Media	Duration	Theory	Caregivers' outcomes						Behaviours			Children's outcomes	
								Behaviours			Knowledge or Attitudes							
								Videotaped	Direct Observation	Telephone Interview	Interview	Focus group	Diary	Rating scale	Test	Survey		
						training programme												
21	Wasik et al. (2006) US	✓	✓	✓	✓	Nine-month period (two hours per month)	Not stated*	✗	✓	✗	✗	✗	✗	✓	✗	✗	✗	
22	Whiteley et al. (2005) UK	✓	✓	✓	✓	One half day of training	Not stated*	✗	✗	✗	✗	✗	✗	✓	✗	✗	✓	
23	Chotsuwan (2007) Thailand	✓	✓	✓	✓	Two days of training (16 hours)	Knowles' theory of andragogy (adult learning)	✗	✗	✗	✗	✗	✗	✓	✓	✗	✗	
24	Chutchaipolrut (2011) Thailand	✓	✓	✓	✓	Two-spiral action research	Not stated*	✗	✓	✗	✓	✓	✗	✓	✓	✗	✗	
25	Kanjanaleaspornt awee (2010) Thailand	✓	✓	✓	✓	One day of training (six hours)	Not stated*	✗	✗	✗	✓	✗	✗	✓	✓	✗	✗	
26	Nakunsong (2009) Thailand	✓	✓	✓	✓	Not stated*	Not stated*	✗	✗	✗	✗	✓	✗	✓	✓	✗	✗	
27	Neamhom (2006) Thailand	✓	✓	✓	✓	12 weeks	Not stated*	✗	✓	✗	✓	✓	✗	✓	✓	✗	✗	

No	Author(s) (Year) Country	Training Methods					Outcomes and Evaluation Techniques									Child development		
		Fixed content	Flexible activities	One site	Media	Duration	Theory	Caregivers' outcomes						Behaviours			Children's outcomes	
								Behaviours			Knowledge or Attitudes							
28	Nosungnoen (2011) Thailand	✓	✓	✓	✓	One day of training (six hours)	Not stated*	✗	✗	✗	✓	✓	✗	✓	✓	✗	✗	
29	Rujisatiensap (2003) Thailand	✗	✗	✗	✗	Not stated	Not stated*	✗	✗	✗	✓	✗	✗	✓	✗	✓	✗	
30	Sala (2010) Thailand	✓	✓	✓	✓	Two days of training (12 hours)	Not stated*	✗	✓	✗	✓	✗	✗	✓	✗	✗	✗	
31	Sompao (2007) Thailand	✓	✓	✓	✓	Two days of training (12 hours)	Bandura's Social Learning Theory	✗	✗	✗	✗	✗	✗	✓	✗	✗	✗	
32	Uraisawat (2005) Thailand	✗	✗	✗	✗	Not stated	Not stated*	✗	✓	✗	✓	✗	✗	✓	✓	✓	✓	
Total		27	27	27	27			10	12	1	10	5	1	26	8	3	5	

NB: \* Appeared to have used characteristics of adult learning

Table 2.10: Summary of literature review on childcare providers' training according to training methods

### 2.3.2 Characteristics of effective child caregiver training

When analysing the review of studies on child caregiver training, the researcher categorised the findings into two major themes, namely effective methods of child caregiver training and training outcome evaluation (see Table 2.10). The first theme was subcategorised into six subthemes: fixed content, flexible activities, one-site location training, use of training media, duration of training and theory used to inform training. The second major theme was further categorised into outcome focuses and outcome assessment techniques.

#### 2.3.2.1 Effective methods of child caregiver training

- A) Fixed content: The majority of the training programmes (27 of 32 articles) used relatively fixed content. Using fixed content allows the trainer to prepare the programme in advance and is highly beneficial when the trainer already knows the characteristics and needs of the trainees. Training with fixed content increases the possibility that the trainer will align the tests with the content delivered to the trainees.
- B) Flexible activities: All experimental studies adopted flexible activities in their **training. Flexible activities, especially when contextualised for training or trainees'** situations, allow greater acceptance and understanding of the training content and the training programme itself. Significantly, the flexibility also accommodates adult learning needs. This also takes into consideration the research methodology or methods used in evaluating the training.
- C) One site: All experimental studies implemented their training at a single site. One-site implementation minimises the variations in training programme, content and activities seen in multi-site training, thus allowing greater control over these aspects of the training and training evaluation.
- D) Media: Almost all training programmes (27 of 32) used certain types of media during the training. These included, but were not limited to, videos, toys, people-as-media, manuals, flipcharts and computer-based presentations.
- E) Duration: The duration of the training programmes varied from four hours to an academic year. This depended largely on the scope of the training. Training programmes aimed at practice changes or with follow-up consultations tended to be longer in duration than those aimed at attitudinal or knowledge changes. Shorter training programmes (i.e. four to 12 hours) with a focus on attitudinal or knowledge changes appeared to be effective despite their duration.

F) Theoretical underpinnings of the training: Four studies clearly identified the theories that informed the design and implementation of their training programme. These theories included Knowles' theory of andragogy or adult learning (Campbell & Milbourne 2005; Chotsuwan 2007), Self-Regulation Theory (Perels et al. 2009), and Bandura's Social Learning Theory (Sompao 2007). These were adopted as guidelines when designing the research. It is however of importance to note that most studies, if not all, adopted some characteristics of adult learning to a certain extent in their training programmes. These characteristics (described later in 2.4.1) have been found to be effective in improving attitudes, knowledge, behaviours and practices following the training.

### 2.3.2.2 Training outcome evaluation

A) Outcome focuses: There were two types of outcomes identified from the reviewed studies, namely caregiver outcomes and child outcomes. These two outcomes can be further categorised into caregiver behaviours, caregiver knowledge, caregiver attitude and child development (Table 2.10). Almost all studies or training programmes (29 of 32) targeted caregiver behaviours as an intended outcome of the training. By the same token, almost all training programmes (29 of 32) targeted caregiver attitude or knowledge as an outcome measure. Only five studies identified child development as an outcome measure of their caregiver training programme. The use of child development as an outcome measure of caregiver training programmes, however, raises a question relating to the validity or bias of this outcome measure. This was due to a lack of proper control in the non-randomised control design which was popular among the reviewed studies (Appendices 2.8 & 2.9). There were a number of factors, for example socioeconomic status of caregivers and physical and sociopolitical environments, that could have confounded the interpretation of improvement in child development. These factors were not adequately addressed or controlled in these studies. It was also not possible to rule out the maturation effect of child development over the time of the study. It was therefore difficult to ascertain the effect of caregiver training on child development.

B) Outcome assessment techniques: Videotaped and direct observation was the most commonly used technique to assess caregiver behaviours, while interviews and focus groups were the second most used method (Table 2.10). Where observation was used, the assessment was guided by a checklist, and usually conducted by two raters or assessors. The use of observation may be subject to the Hawthorne Effect, which added to the weaknesses of the studies (Appendices 2.8 & 2.9). The knowledge was assessed through the use of a test developed by the researcher. Attitude was assessed through the use of standard instruments or instruments developed by the researcher.

Due to a lack of access to the instruments, it was difficult to determine whether the tests were aligned with the content of the training programme.

### 2.3.3 Research designs used to test effectiveness of child caregiver training and methodological issues

Based on the aforementioned descriptive review of studies on child caregiver training (Section 2.2.3) and the analytical review (Appendices 2.8 & 2.9), the researcher identified the strengths and weaknesses of the reviewed studies as follows:

UK studies: Sixteen UK studies employed a quasi-experimental design with a control group. Three studies used one-group pre-test/post-test design. Two studies used a randomised control design, while one study was a meta-analysis of the effects of child caregiver training. Eight studies were considered small sample size studies (sample sizes = 5-48).

Thai studies: Three Thai studies employed a quasi-experimental design with a control group. Four studies used one-group pre-test/post-test design. One study used participatory action research with quantitative evaluation, similar to one-group pre-test/post-test design. The remaining two studies were of descriptive design. Six out of the seven studies which were of experimental design were considered small sample size studies (sample sizes = 8-30).

It was clear from the review that the majority of the studies were subject to selection bias, due to non-randomised assignment of the trainee sample in the case of quasi-experimental design with control group, or lack of control group in the case of one-group pre-test/post-test design. The lack of control is prominent in all studies, including the only two randomised controlled studies in the UK category. Due to **inadequate control over trainees' performance during the study period, the** effectiveness of these training programmes must be interpreted with careful consideration of possible confounders. This in effect compromised the internal validity of the training programmes used in these studies. Despite compromised internal validity, however, the studies promised external validity of their training programmes to a certain extent. That is, the experimental conditions used in most, if not all, reviewed studies reflected real-life situations in terms of child caregivers, settings, contexts and trends in future child caregiver training programmes or development needs (Taylor & Asmundson 2008). By and large, external validity of training programmes refers to the ability to generalise effects of the training across wider population and settings.

## 2.4 Nursery Workers as Adult Learners

### 2.4.1 **Knowles' Adult Learning Theory**

Effective learning is founded on a good understanding of learners. Adult learners such as nursery workers are no exception to this. With respect to adult learning, adult learners require respect from others, do not want to be forced, punished or embarrassed and also require self-decision (Knowles 1984; De Lorenzo & Abbott 2004; Quinn & Hughes 2007). Knowles' theory of andragogy (1984) was an attempt to develop a theory specifically for adult learning. Andragogy applies to any form of adult learning, and has been used extensively in the design of organisational training programs. Knowles himself has implemented the concepts of adult learning with people from different cultural backgrounds including Thai, Japanese, Singaporean and Korean learners (Knowles 1996). Knowles emphasised that adults are self-directed and expect to take responsibility for decisions. Adult learning programmes must accommodate this fundamental aspect. Andragogy makes the following assumptions about adult learning:

1. Adults need to know why they need to learn something.
2. Adults need to learn experientially.
3. Adults approach learning as problem-solving.
4. Adults learn best when the topic is of immediate value.

In practical terms, andragogy means that instruction for adults needs to focus more on the process and less on the content being taught. Strategies such as game activities, role play, simulations and self-evaluation are the most useful. Instructors adopt the role of facilitator or resource rather than lecturer or grader (Knowles et al. 1998). Several methods should be used continuously in order to improve higher education; interest should be stimulated by explaining the benefits of these methods, thus creating encouragement and respect. All trainees should be allowed to participate without being forced to do so or experiencing a negative atmosphere. Consequently, training techniques must be varied. Knowles (1998) developed the basic principles of adult learning as follows:

1. Needs and interests: The learning topic matches the needs of nursery workers.
2. Life situations: The learning of adults is effective if it is based on realistic, everyday situations.

3. Analysis of experience: Experience is one of the most valuable learning sources for adults.
4. Self-directing: As adults have a desire to be self-directing, the teacher's role should be to instigate the process of mutual inquiry, rather than to be a medium for knowledge followed by evaluation.
5. Individual difference: Adults value their individuality; therefore, teaching styles should respect this.

The principles of adult learning are different from the principles of formal school education (pedagogy); pedagogy emphasises conventional learning, which starts from an accepted fact or axiom and then connects to the development of a new body of knowledge. In adult learning, the learners arrive with existing experiences, opinions and life philosophies. This learning, therefore, should motivate the learner to search for new knowledge. Adults only learn things that they want to learn and want to hear, and each individual will have his/her own learning style. Adults also need to be free to **participate in the group's** activities. Adult learning focuses on the process of cooperation. As andragogy is clearly essential to the success of adult training, this researcher considered several aspects: adult interest in the subject, need and necessity for training, pattern and method of training, friendly training atmosphere and allowing for free expression of opinion and participation.

There is ample evidence to suggest that components of adult learning methods and strategies are effective at improving learning outcomes among adult learners. Dunst et al. (2010) conducted a meta-analysis of 58 randomised controlled trials with a total sample size of 4,308 (experimental group = 2,095; control group = 2,213). The results showed that adult learning method practices are effective at improving learning outcomes including knowledge, skills or practices, self-efficacy beliefs and attitude. The effective practices identified in this meta-analysis include pre-class exercises, learner inputs, classroom lectures, workshops, dramatic reading, imagery, role play, simulations, use of real life examples, real life application, instructional videos, problem-solving tasks, learning games, written exercises, assessment of strengths and weaknesses, review of experiences, making changes, performance improvement, journaling, behaviour suggestions, group discussion about feedback, standard-based assessment, self-assessment, out-of-class activities and self-instruction. Apart from dramatic readings or imagery alone or dramatic plus imagery, these practices exhibit **mean effect sizes (Cohen's d)** between 0.34-1.27. Dramatic readings and imagery alone have mean effect sizes of -0.01 and -0.02 respectively. When dramatic readings and imagery are used together, they have a mean effect size of 0.28. Usually, multiple method practices are used in a training programme. Different phases of training implementation may require different practices (Dunst & Trivette 2012).

The same meta-analysis (Dunst et al. 2010) also highlighted that training/educational programmes targeting practitioners have a greater mean effect size than those targeting college students (the mean effect sizes are 0.70 and 0.29 respectively). In the same fashion, training/educational programmes implemented in the workplace have a greater mean effect size than those implemented in university classrooms (the mean effect sizes are 0.64 and 0.32 respectively). These results may suggest that adult learning methods are more effective in improving learning outcomes among working adults than college students. The number of participants in the training programme also influences learning outcomes. Training or educational programmes with a small number of participants ( $n=9-34$ ) have greater mean effect size than those with medium ( $n=35-75$ ) and large ( $n=76-300+$ ) (the mean effect sizes are 0.91, 0.48 and 0.33 respectively). Long-duration training (40 hours or longer) has a greater effect size than intermediate (11-40 hours) and short-duration (1-10 hours) (the mean effect sizes are 0.60, 0.55 and 0.21 respectively) (Dunst & Trivette 2012).

According to Knowles et al. (1998), adult learning begins by determining the needs and goals of learning. Based on identified needs, strategies and resources are created **to achieve the goals. In this study, 'strategies' refer to the instructional training** programme. The learners then implement the strategies and evaluate the attainment of the learning goals. Adult learning is essentially cyclical in nature as the need-create-implement-evaluate circle may repeat until the learners achieve the set goals.

## 2.4.2 **Evaluation of Training: Kirkpatrick's Framework**

Evaluation is traditionally the final stage in a systematic approach to training. The purpose of evaluation is to identify issues for further improvements of interventions or to make a judgment about effectiveness (Gustafson & Branch 2002). Frameworks for evaluation of training programmes can be categorised into two major approaches: goal-based and system-based (Eseryel 2002). The most influential goal-based **framework has been Kirkpatrick's model** (2006) which is based on four levels of evaluation: reaction, learning, behaviour and results. Under the system-based approach, the most influential models include the Context, Input, Process and Product (CIPP) Model, Training Validation System (TVS) Approach and Input, Process, Output, Outcome (IPO) Model (Eseryel 2002). Because the objectives of this study were to assess knowledge and attitude towards play among nursery workers following the **training programme (MMTP)**, **Kirkpatrick's model was chosen as an evaluation** framework for this study. A system-based model was not chosen because it was beyond the scope of this training programme (assessments did not concern inputs and processes). Additionally, due to its straightforward steps and simplicity, Kirkpatrick's model would ease adoption and application of the MMTP and the evaluation tools

already developed for this study. This took into consideration the fact that the MMTP was developed in and for settings with limited knowledge of evaluation techniques (e.g. childcare centres or SAOs). Simple evaluation models would be more acceptable and meaningful to these settings than sophisticated ones. Kirkpatrick's model has been a very popular evaluation model since the late 1950s. The focus is on measuring four types of outcome that should result from a training programme: reaction, learning, behaviour and results.

#### 2.4.2.1 Level 1 - Reaction

According to Kirkpatrick (2006), reaction equates to satisfaction of training participants. Satisfaction is a facilitative factor to learning. Trainees may be asked to rate their satisfaction with the content, timing, duration, environment, meals, activities and atmosphere of the training. Moreover, they may rate the trainer's performance and perceived usefulness of the training.

#### 2.4.2.2 Level 2 - Learning

In evaluating the learning outcomes, Kirkpatrick (2006) focused on changes in attitude, knowledge and skills following programme attendance. Trainees' attitude and knowledge are usually assessed using achievement tests. These tests are aligned with the content delivered to the trainees and constructed by the trainers - hence criterion-referenced tests. In certain circumstances, they may be assessed by norm-reference tests. In these circumstances, the trainer uses traditional standardised tests to assess their trainees. Standardised tests allow a wider comparison of the learning outcomes of trainees with an external norming group. Skills, on the other hand, can be assessed by using a performance test. The trainer develops checklists to guide the assessment of the trainee's performance on the assigned tasks, which may take the form of return demonstration. The assessment should involve at least two raters in order to increase the reliability of the evaluation results - i.e. inter-rater reliability. It is very important to note that learning is requisite to behavioural changes (to be described below) and should therefore be stressed in the training programme.

#### 2.4.2.3 Level 3 - Behaviour

Measuring behaviour primarily concerns transfer of attitudes, knowledge and skills gained from training to the workplace. The transfer is likely to happen in a supportive workplace. These include (but are not limited to) clear policies and guidelines, adequate budgets, adequate staffing level/equipment/facilities and good teamwork. Assessing behavioural changes can be carried out quantitatively or qualitatively. In the quantitative assessment, observation and self-assessment may be used alone or in combination. For observation, the assessor may develop a checklist to guide their

assessment. As described above, at least two raters are required to increase the reliability of the evaluation results. Where direct observation is not possible, video recording may be used. Alternatively, self-assessment may be considered, while acknowledging its weaknesses such as over- or under-reported behaviours. Qualitative evaluation can be used to describe and explain behavioural changes (Patton 2002). Qualitative data allows a more holistic understanding of changes, as they reveal the contexts in which changes occur. When using qualitative evaluation, interviews, direct observation and video recording are available alternatives for data collection (as described in Chapter 3).

#### 2.4.2.4 Level 4 - Results

Results refer to the final outcomes that the training programme aims to deliver. Results can be, for example, increased production, improved quality, cost savings and better profits (Kirkpatrick & Kirkpatrick 2006). For the MMTP, the results may include (but are not limited to) an increase in the number of play activities implemented by **nursery workers, improved children's access to play, increased adoption of SPECIAL** in designing play activities and establishment of policies and guidelines related to play in childcare centres. Long-term results of the MMTP may include improved child development with special regard to social, physical and emotional development, creativity, intelligence, autonomy and language.

### 2.5 Justification for Conducting the Study

Based on the review of the studies above, which were all published between 2000 and 2013, it could be advocated that the inclusion of instruction related to a significant positive effect of specialised training on the competency of caregivers in childcare. It shows that teacher-child interaction should play a major part in the curriculum of vocational training for caregivers.

Experimental results from the meta-analysis were significantly smaller for settings with no fixed curriculum content, delivery of the training at multiple sites and large-scale programmes.

Results were also smaller when tests were used that did not align closely with the content of the training. Furthermore, experimental results were smaller for the skills domain, compared to the knowledge and attitude domain. A subset of experiments with both caregiver and child data also showed a positive effect, supporting the causal link between caregiver training, caregiver competencies and child behaviour in childcare, although this effect was not significant due to the small number of studies.

The literature review shows that the importance of creating a play environment is not included in the training of nursery workers or those connected to the care of young children. However, it has been recognised that play is essential for the development of children and that children develop and learn through their play (Stagnitti 2004; Ginsburg et al. 2007; Barnett et al. 2008; Saracho 2010). It is therefore important that adults are able to make provision for play (Samuelsson & Johansson 2006), encouraging children in their play and knowing when to be involved and to intervene in play activities (Marjanović Umek & Lesnik Musek 2001) so that children gain as much benefit as possible (Lloyd & Howe 2003; Vickerius & Sandberg 2006; Ginsburg et al. 2007). This study illustrates how nursery workers are prepared for their role, how play can be used to enhance child development and how much Thai nursery workers understand about child development through play, the importance of play for children and the play environment.

Although the literature base in Thailand is reasonably scant, there have been a number of studies that the researcher has been able to retrieve in order to carry out a comparison with the Western literature. This has allowed the researcher to make a comparison between the amount of knowledge taught about the play environment in the UK and Thailand, using content analysis, which is the most suitable method for cross-linguistic studies (Twinn 1997; Ny et al. 2008).

The gap in knowledge is a lack of training for nursery workers in how to develop a suitable play environment. Therefore, this study will identify the necessary content for the training package and assess its effectiveness.

The aim of this evidence-based literature review was to find out how the ability of childcare workers or nursery workers can be improved by training. It is apparent from the systemic critical appraisal of the selected literature that similar methodologies were used. It is clear that the participants in the reviewed studies required further support and education, while a significant number do not seem to have received any integrative play training in the last ten years.

This is despite the importance that training curricula place on the relationship between play and child development (Vickerius & Sandberg 2006; Ginsburg et al. 2007). The current curriculum for Thai nursery workers is somewhat sparse on play and environment training.

**This study focuses on improving the quality of nursery workers' instructional teaching** package so that they are encouraged to provide a more efficient play environment to children as well as promote early child development in childcare centres. The implementation and outcomes of such a package will be assessed through research.

Therefore, it was decided to study the need to educate Thai nursery workers by developing and investigating an instructional training package designed to improve **Thai nursery workers' knowledge of and attitude towards the importance of play**. It may positively impact on the quality of early child development in childcare centres in Thailand. One question remains, however: What would be the most appropriate yet practical training programme to promote attitude and knowledge or practices in relation to play and play environments among Thai childcare workers?

From the aforementioned analytical review, the training programme should address all aspects of child development as they reflect holistic child development (SEAMEO-INNOTECH 2011). These include social, physical, emotional, creative, intellectual, autonomy and language development. The content of a training programme aimed at addressing play should be designed in advance with a specified scope, i.e. fixed **content, according to Thai child caregivers' needs. The training should make use of** different kinds of teaching and learning media or materials in order to effectively deliver the content to the trainees. The training activities should allow a certain degree of flexibility in order to promote acceptance and understanding of the training among the trainees. As the nursery workers are mature adults, characteristics of effective adult learning should be adopted. To minimise training variations and maximise control, the training should take place at one site. The most appropriate duration for the training programme should be considered carefully from the practical and research methodological points of view. The ideal duration should allow enough time for the intervention (i.e. the training) to have effects (i.e. attitude and knowledge) on the trainees, while causing the least interruptions to their work and life. The abovementioned review shows that four to 12 hours of training are adequate for effects on attitude and knowledge. Taking the scope of the training content into consideration, the researcher decided the training duration should be either six hours or one day. This duration would allow coverage of all the content while minimising interruptions to the trainees. To establish the effectiveness of the training programme, experimental designs should be used. In this case, a randomised or non-randomised controlled design is favoured over other designs. However, the methodological choices depend on a number of factors, for example scientific merit, access to participants, access to childcare centres and available resources (i.e. time and money). In order to accommodate issues relating to limited available resources, the quasi-experimental design with a comparison group is indicated. Despite not being the strongest design, the quasi-experimental study offers the possibility of establishing the effectiveness of the training programme and promises its external validity.

## 2.6 Research Question, Aim and Objectives

Following the critical review of the literature, the following research question and objectives were developed to respond to the gaps in literature.

### 2.6.1 Research Question

Will a multimedia teaching package enhance knowledge of and attitudes towards the importance of play and the play environment for Thai nursery workers?

### 2.6.2 Aim

To develop a multimedia teaching package designed to enhance knowledge of and attitudes towards the importance of the play environment for Thai nursery workers.

### 2.6.3 Objectives

1. To design a multimedia teaching package following a critique of UK and Thai curricula using content analysis.
2. To evaluate the effectiveness of a multimedia teaching package (MMTP) in promoting improved attitudes and knowledge in Thai nursery workers.

### 2.6.4 Research Hypotheses

1. Nursery workers in the Lampang intervention group would have a greater improvement in knowledge and attitudes scores pertinent to the importance of play and the play environment in the first and second post-tests compared with the pre-test.
2. Nursery workers in the Lampang intervention group would have a greater improvement in knowledge and attitudes scores pertinent to the importance of play and the play environment than the Nonthaburi control group when assessed in the first post-test.
3. Nursery workers in the Lampang intervention group would have a greater improvement in knowledge and attitude scores pertinent to the importance of play and the play environment than those in the two control groups when assessed in the second post-test.

## 2.7 Chapter summary

This chapter has described a systematic literature review of child caregiver training. The review was based on Parahoo's (2006) method of critical appraisal of literature.

The review findings have highlighted gaps in child caregiver education and areas of child development in Thailand, hence the need to address such gaps. Play has been identified as a critical strategy that can be used to promote child development. The review has further identified effective characteristics of training programmes for improving attitude, knowledge, behaviours and practices of child caregivers. These characteristics reflect those of adult learning. Gaps in research designs used to test the effectiveness of the training programmes have also been highlighted. The review findings provide the inputs for the development of training programme to promote attitude and knowledge towards play and play environments among Thai nursery workers.



# Chapter 3: Research Methodology and Methods

This chapter will explain the methodology and methods used in this study, including the research methods and design, population and sample, data collection procedure, data analysis, trustworthiness and authenticity and the limitations. The ethical considerations and data protection issues of the study are also presented.

Additionally, the steps taken by the research student in designing the multimedia teaching package (MMTP), including her own personal development, will be discussed.

The research methodology and research methods undertaken in this study, namely a mainstream mixed methods approach, were chosen with the aim of developing a multimedia teaching package (MMTP), designed to enhance knowledge of the play **environment as well as better Thai nursery workers' attitudes towards the importance** of said environment.

To achieve the overall aims, a sequential embedded quasi-experimental mixed methods approach (Creswell & Plano Clark 2011; Edmonds & Kennedy 2013) was taken towards this study. The research was based on a pragmatic paradigm, providing an improved understanding of the research problem (Creswell 2009). An overview of the eight main areas of this chapter is presented in Table 3.1.

Heading	Topic
3.1	An introduction to research paradigms, methodology and methods
3.2	An overview of mixed methods research
3.3	Mixed methods design consideration in this study
3.4	Research Methods in Phase I: Part A
3.5	Research Methods in Phase I: Part B
3.6	Research Methods in Phase II: Part A
3.7	Research Methods in Phase II: Part B
3.8	Ethical considerations and data protection issues

Table 3.1: Overview of Headings in Chapter 3

## 3.1 Research Paradigms, Methodology and Methods

### 3.1.1 Research Paradigms

**Paradigms** are sets of beliefs and practices, shared by communities of researchers, which regulate inquiry within disciplines (Weaver & Olson 2006). All research is based on a philosophical belief about the worldview or paradigm (Bryman 2012). The main paradigms or worldviews that are traditionally presented as fundamentally opposed are those of positivism/post-positivism and constructivism/interpretivism (Creswell & Plano Clark 2011).

The various paradigms are characterised by ontological, epistemological and methodological differences in their approaches to conceptualising and conducting research and their contribution towards disciplinary knowledge construction (Weaver & Olson 2006). Paradigms influence the study of phenomena, designs and methods in order to allow the researcher to choose the most appropriate way to answer their research questions (Creswell & Plano Clark 2011).

The research paradigm comprises three assumptions, which are ontology (reality), epistemology (knowledge of that reality) and methodology (the ways of understanding that reality). This paradigm has been continuously developed from positivism, post-positivism and critical theory through to constructivism. Hence, the particular assumption of the paradigm of each school brings out different inquiry processes (Lincoln & Guba 2011).

A summary presented in Table 3.2 compares the four social and behavioural science paradigms used to illustrate the diversity in philosophy: positivism/post-positivism, interpretivism/constructivism, transformative and pragmatic. The diversity in logic and ways of thinking leads to diversity in the use of research methods. Positivists believe in deductive logic, while constructivists recognise inductive logic. Post-positivists emphasise deductive logic, although not completely; pragmatist researchers, meanwhile, recognise both deductive and inductive logic. In terms of epistemology, post-positivists believe that research findings are objectively real. Positivists concentrate on quantitative research, while post-positivists tend to be more qualitatively-oriented. Pragmatist researchers practice the integration of both methods in their research. Pragmatic can be used as a guide not only for top-down deductive research design but also for grounded inductive or adductive research (Feilzer 2010).

Paradigm	Positivist/Post-positivist	Interpretivist/Constructivist	Transformative	Pragmatic
Perspective	<ul style="list-style-type: none"> <li>- Determination</li> <li>- Reductionism</li> <li>- Empirical observation and measurement</li> <li>- Theory verification (Creswell &amp; Plano Clark 2011)</li> </ul>	<ul style="list-style-type: none"> <li>- Understanding</li> <li>- Multiple participant meanings</li> <li>- Social and historical construction</li> <li>- Theory generation (Creswell &amp; Plano Clark 2011)</li> </ul>	<ul style="list-style-type: none"> <li>- Critical theory</li> <li>- Neo-Marxist</li> <li>- Feminist</li> <li>- Critical Race Theory</li> <li>- Freirean</li> <li>- Participatory</li> <li>- Emancipatory</li> <li>- Advocacy</li> <li>- Grand Narrative</li> <li>- Empowerment issue-oriented</li> <li>- Change-oriented</li> <li>- Interventionist</li> <li>- Queer theory</li> <li>- Race specific</li> <li>- Political</li> </ul> <p>(Mackenzie &amp; Knipe 2006)</p>	<ul style="list-style-type: none"> <li>- Consequences of actions</li> <li>- Problem-centred</li> <li>- Pluralistic</li> <li>- Real-world practice-oriented (Creswell &amp; Plano Clark 2011)</li> </ul>
Approach (Edmonds & Kennedy 2013)	<ul style="list-style-type: none"> <li>- Grounded theory</li> <li>- Ethnographic</li> <li>- Narrative</li> <li>- Phenomenology</li> </ul>	<ul style="list-style-type: none"> <li>- Between-Subject</li> <li>- Within-Subject</li> <li>- Regression Discontinuity</li> <li>- Single-Case</li> </ul>	<ul style="list-style-type: none"> <li>- Observational</li> <li>- Survey</li> </ul>	
Methods (Mackenzie & Knipe 2006)	Quantitative methods are predominant and normally used; qualitative methods are also used within this paradigm	Qualitative methods predominate although quantitative methods may also be utilised	Qualitative methods with quantitative and mixed methods. Contextual and historical factors described, especially as they relate to oppression	Qualitative and/or quantitative methods may be employed. Methods are matched to the specific questions and purpose of the research
Design (Edmonds & Kennedy 2013)	<ul style="list-style-type: none"> <li>- Systematic</li> <li>- Descriptive</li> <li>- Emerging</li> <li>- Explanatory</li> <li>- Constructivist</li> <li>- Existential</li> <li>- Realist</li> <li>- Transcendental</li> <li>- Critical</li> <li>- Case Study</li> <li>- Hermeneutic</li> </ul>	<ul style="list-style-type: none"> <li>- Pre-test/Post-test</li> <li>- Post-test</li> <li>- Factorial</li> <li>- Solomon N-Group</li> <li>- A-B</li> </ul>	<ul style="list-style-type: none"> <li>- Post-test (one-group)</li> <li>- Ex post facto</li> <li>- Explanatory</li> <li>- Predictive</li> <li>- Cross-sectional</li> <li>- Longitudinal</li> </ul>	
Data collection tools (Mackenzie & Knipe 2006)	<ul style="list-style-type: none"> <li>- Experiments</li> <li>- Quasi-experiments</li> <li>- Tests</li> <li>- Scales</li> </ul>	<ul style="list-style-type: none"> <li>- Interviews</li> <li>- Observations</li> <li>- Document reviews</li> <li>- Visual data analysis</li> </ul>	Diverse range of tools - particular need to avoid discrimination e.g. sexism, racism, and homophobia	May include tools from both positivist and interpretivist paradigms e.g. interviews, observations and testing and experiments

Table 3.2: Research Dilemmas: Paradigms, Methodology and Methods (adapted from (Creswell 2009; Tashakkori 2010; Edmonds & Kennedy 2013)

### 3.1.2 Methodology and Methods

The term **methodology** refers to the philosophical framework and the fundamental assumptions of research that relate to its entire process (Creswell & Plano Clark 2011). The concept of research methodology embraces a broader scope of research design and methods.

**Research design** refers to the plan of action that links the philosophical assumptions to specific research methods (Creswell & Plano Clark 2007). **Methods** are techniques of data collection used to obtain results from the research and analysis (Creswell 2009). Therefore, mixed methods research is empirical research design that embraces philosophical assumptions as well as methods of inquiry. As part of this methodology, these philosophical assumptions guide the direction of the collection and analysis of data and the integration of qualitative and quantitative approaches in many phases of the research process. As a method, it focuses on collecting, analysing and mixing both qualitative and quantitative data in a single study or series of studies (Creswell 2009; Punch 2009; Creswell & Plano Clark 2011). Figure 3.1 illustrates the interaction between paradigm, methodology, and research method.

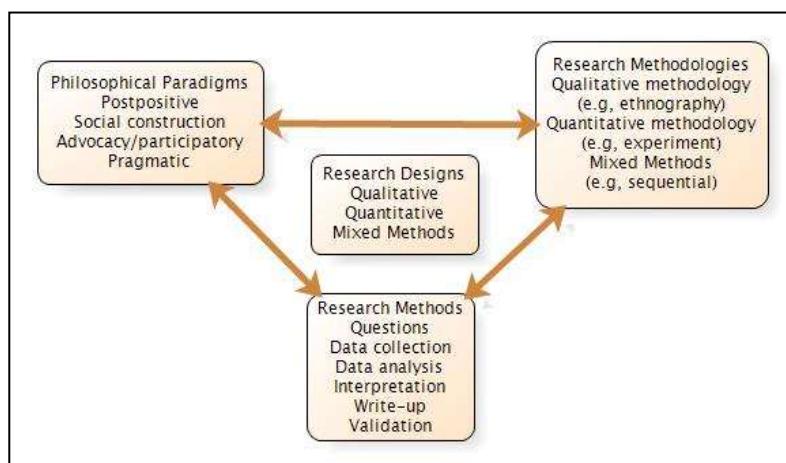


Figure 3.1: The Interaction of Paradigms, Methodologies, and Research Methods  
(Creswell 2009)

### 3.2 Mixed Methods Research

Mixed methods research, as the third research paradigm, can help bridge the schism between quantitative and qualitative research (Tashakkori & Teddlie 2003; Onwuegbuzie & Leech 2005). A mixed method is a conscious approach with the aim of obtaining qualitative research and adequate explanations of social phenomena (Cronholm & Hjalmarsson 2011).

Mixed methods research is defined as research design that involves the collection, analysis, and integration (or combination) of both quantitative and qualitative research and methods within a single research study in order to answer research questions (Johnson et al. 2007; Denscombe 2008; Lingard et al. 2008; Creswell 2009; Creswell & Zhang 2009; Creswell & Plano Clark 2011). The combination of qualitative and quantitative approaches can occur at different stages of the research process, such as formulation of research questions, sampling, data collection and data analysis (Onwuegbuzie & Leech 2005; Bryman 2006; Teddlie & Tashakkori 2009; Creswell & Plano Clark 2011). It differs from multi-method research, which includes more than one method of collecting data within either a quantitative or qualitative study, for example using participant observation within in-depth interviews (Chow et al. 2010).

### 3.2.1 History of Mixed Methods Research

Historical and philosophical discussions concerning mixed methods research have grown in number during the last few decades. Mixed methods research began in the late 1950s and became more prominent during the 1980s (Tashakkori & Teddlie 2003; Creswell & Plano Clark 2007). During the 1970s and 1980s, it was considered that the best philosophical foundation for mixed methods research was ***pragmatism***. Pragmatists believed that multiple paradigms could be used to address research problems. This is referred to as the paradigm debate period (Creswell & Plano Clark 2011). During the 1980s, attention began to shift towards methods or procedures for designing a mixed methods study, and thus began the procedural development period (Tashakkori & Teddlie 1998). Various other publications have promoted the use of combining different approaches to undertaking research (Teddlie & Tashakkori 2009; Hesse-Biber 2010; Tashakkon & Teddlie 2010; Creswell & Plano Clark 2011; Plowright 2011).

There are many resources for this type of research, such as the increasing number of mixed methods textbooks (Greene 2008; Andrew & Halcomb 2009; Creswell 2009; Teddlie & Tashakkori 2009; Hesse-Biber 2010; Tashakkon & Teddlie 2010; Creswell & Plano Clark 2011; Plowright 2011; Johnson & Christensen 2012; Edmonds & Kennedy 2013), overview papers (Johnson & Onwuegbuzie 2004; Onwuegbuzie & Leech 2005; Bryman 2006; Ivankova 2006; Moffatt et al. 2006; Leech & Onwuegbuzie 2007; Morgan 2007; O'Cathain et al. 2007; Leech et al. 2009; Farquhar et al. 2011; Lisle 2011; O. & A. 2011; Symonds & Gorard 2012) and new dedicated journals devoted to mixed methods: the Journal of Mixed Methods Research and the International Journal of Multiple Research Approaches.

Mixed methods research is increasingly used in healthcare research on pragmatic paradigms in order to engage with the variety of questions relevant to the complexity of healthcare (O'Cathain et al. 2007; Farquhar et al. 2011). The proportion of health research studies classified as mixed methods research has increased over time, from 17% of studies commissioned in the mid-1990s to 30% in the early 2000s (O'Cathain et al. 2007). Weaver & Olson (2006) have suggested that this pragmatic approach to theory development, through synthesis of cumulative knowledge, is also relevant to nursing practice.

Moreover, researchers are incorporating qualitative and quantitative research as part of mixed methods studies in various areas, such as social, behavioural and health sciences research (Collins et al. 2006; Farquhar et al. 2011). This is because this type of research model is appropriate for the investigation of a large number of contemporary and complicated research questions (Creswell & Zhang 2009; Creswell & Plano Clark 2011).

### 3.2.2 Rationale for Mixed Methods

The idea behind mixed methods research is that both qualitative and quantitative approaches to data-gathering, in combination, provide a better understanding of a research problem or issue than using either research approach alone (Creswell & Plano Clark 2011). It does not involve replacing either of these approaches; rather, it draws from the strengths and minimises the weaknesses of both (Johnson & Onwuegbuzie 2004).

Mixed methods design is useful when one approach alone is inadequate. The use of both approaches (qualitative and quantitative) increases the overall strength of a study and allows the answers richness in both depth and width of academic knowledge (Creswell 2009). Mixed methods design can complete, clarify, increment and enhance the validity of data and balance the strengths and weaknesses of the methods used (Tashakkori & Teddlie 1998; Denscombe 2010). With mixed methods, findings are likely to be more trustworthy and relevant than if separate approaches are used (Creswell 2009).

Greene (2008) illustrated five different purposes of mixing methods, as shown in Table 3.3.

Purpose	Explanation
Complementarity	Where different methods are used to investigate different aspects or dimensions of the same phenomena in order to deepen or broaden the interpretations and conclusions from a study.
Triangulation	Where different methods are used to measure the same phenomena, to increase confidence in conclusions reached (whether those conclusions are consistent or convergent).
Initiation	Where different methods are used to investigate different aspects or dimensions of the same phenomena; in contrast to complementarity, the intention is divergence in order to generate new understandings.
Expansion	Where different methods are used to assess different phenomena in order to expand the scope and range of the study.
Development	Where results from one method are used to inform the development of another method e.g. instrument development, then sampling and implementation.

Table 3.3: Five Rationales of Mixed Methods (Greene 2008)

### 3.2.3 Mixed Methods Design

Mixed methods research mostly takes a pragmatic approach, in which the selection of a research design is based on the nature of the research problem or research questions (Creswell 2009). The majority of mixed methods research designs can be developed from the two major types of mixed methods research: mixed model (mixing qualitative and quantitative approaches within or across the stages of the research process) and mixed methods (the inclusion of a quantitative phase and a qualitative phase within an overall research study). The integration of different research techniques, or paradigm research with mixed methods, is now widely adopted (Lingard et al. 2008; Palinkas et al. 2011; Plowright 2011)

To construct a mixed methods design, Johnson and Onwuegbuzie (2004) claimed that the researcher must make two primary decisions: (a) whether or not to operate largely within one dominant paradigm, and (b) whether to conduct the research phases concurrently or sequentially. In contrast to mixed model designs, mixed methods designs are similar to conducting a quantitative mini-study and a qualitative mini-study within one overall research study. Nonetheless, to be considered a mixed methods design, the findings must be mixed or integrated at some point (a qualitative phase might be conducted in order to inform a sequential quantitative phase; alternatively, if the quantitative and qualitative phases are undertaken concurrently, the findings must, at a minimum, be integrated during the interpretative phase).

Table 3.4 depicts nine mixed methods designs from Johnson and Onwuegbuzie (2004), adapted from studies by Morgan (1998), Morse (1991) and Tashakkori & Teddlie (1998). The notation used (based on Morse 1991) is explained at the bottom of the table. It is important to understand that more user-specific and complex designs than the ones shown in Table 3.4 can easily be created: for example, a mixed methods **design with more stages can be developed, such as qual → QUAN → qual, a design that includes both mixed model and mixed methods design features.**

Paradigm Emphasis Decision		Time Order Decision	
		Concurrent	Sequential
	Equal Status	QUAL + QUAN	QUAL → QUAN
		QUAN + QUAL	QUAN → QUAL
Dominant Status	QUAL + quan	QUAL → quan qual → QUAN	
	QUAN + qual	QUAN → qual quan → QUAL	

**Note.** 'qual' stands for qualitative, 'quan' stands for quantitative, '+' stands for concurrent, '→' stands for sequential, CAPITAL LETTERS denote high priority or weight, and lower case letters denote lower priority or weight.

Table 3.4: Mixed Methods Design Matrix with Mixed Methods Research Designs Shown In the Four Cells (Johnson & Onwuegbuzie 2004)

Creswell & Zhang (2009) classified mixed methods designs into four major types within social and human sciences: triangulation, embedded, explanatory and exploratory design. Creswell & Plano Clark (2007; 2011) identified 12 classification systems, drawn from the fields of evaluation, nursing, public health, education policy and research and social and behavioural research. Within these classifications, authors use diverse terms for their types of designs, and a substantial amount of overlap exists in the typologies (Creswell 2009). In order to consider several aspects that influence the design of procedures for a mixed methods study, Creswell (2009) summarised four important aspects: timing, weighting, mixing and theorising, as shown in Table 3.5.

Timing	Weighting	Mixing	Theorising
No Sequence concurrent	Equal	Integrating	Explicit
Sequential- Qualitative first	Qualitative	Connecting	
Sequential- Quantitative first	Quantitative	Embedding	

Table 3.5: Aspects to Consider in Planning a Mixed Methods Design (Creswell 2009)

Furthermore, sometimes a design may emerge in new ways during a study, depending on the conditions and information obtained. A tenet of mixed methods research is that researchers should mindfully create designs that effectively answer their research questions; this is in contrast to the common approach in traditional quantitative research, where students are given a menu of designs from which to select (Creswell & Plano Clark 2011). It also stands in stark contrast to the approach where either the qualitative or quantitative paradigm is followed completely. Tashakkon and Teddlie (2010) present five types of mixed methods designs in Table 3.6 below:

Design	Procedures
Parallel mixed	<ul style="list-style-type: none"> <li>- Mixing occurs in a parallel manner.</li> <li>- Data is collected simultaneously (or with some time lapse).</li> <li>- QUAL and QUAN phases answer related aspects of the same research questions.</li> </ul>
Sequential mixed	<ul style="list-style-type: none"> <li>- Mixing occurs across chronological phases (QUAL + QUAN).</li> <li>- Questions or procedures from one method emerge from, or depend on, the one prior.</li> <li>- Research questions are related to one another and may evolve.</li> </ul>
Conversion mixed	<ul style="list-style-type: none"> <li>- Parallel design is used.</li> <li>- Mixing occurs when one type of data is transformed and analysed both qualitatively and quantitatively.</li> <li>- This is used to answer related aspects of the same research questions.</li> </ul>
Multilevel mixed	<ul style="list-style-type: none"> <li>- Parallel or sequential design is used.</li> <li>- Mixing occurs across multiple levels of analysis.</li> <li>- QUAN and QUAL data from these different levels are analysed and integrated in order to answer aspects of the same (or related) research questions.</li> </ul>
Fully integrated mixed	<ul style="list-style-type: none"> <li>- Mixing occurs in an interactive manner at all stages of the study.</li> <li>- At each stage, one approach affects the formulation of the other.</li> <li>- Multiple types of implementation processes occur.</li> </ul>

Table 3.6: Families of Mixed Methods Designs (Tashakkon & Teddlie 2010)

### 3.2.4 Mixed Methods Data Analysis

Mixed methods analysis requires use of qualitative and quantitative analytic techniques either concurrently or sequentially (Teddlie & Tashakkori 2009; Onwuegbuzie & Combs 2010). Table 3.7 presents nine cross-over analysis types identified by (Onwuegbuzie & Combs 2010), which can be used to reduce, display, transform, correlate, consolidate, compare, integrate, assert or import data. Cross-over mixed analyses involve the integration of qualitative and quantitative analyses to a greater extent than do other types of mixed analyses, because they involve the mixing or combining of qualitative and quantitative-based paradigmatic assumptions and stances (Onwuegbuzie & Combs 2010).

Analysis Step	Cross-Case Analysis Strategies
Integrated data reduction	Reducing the dimensionality of qualitative data/findings using quantitative analysis or vice versa
Integrated data display	Visually presenting both qualitative and quantitative results within the same display
Data transformation	Converting quantitative data into data that can be analysed qualitatively and/or qualitative data into numerical codes that can be analysed statistically
Data correlation	Correlating quantitative data with qualitative data or vice versa
Data consolidation	Combining or merging multiple data sets to create new or consolidated codes, variables or data sets
Data comparison	Comparing qualitative and quantitative data/findings from two different sources
Data integration	Integrating quantitative and qualitative data into either a coherent whole or two separate sets, which will be analysed and interpreted simultaneously as a single dataset and two datasets (quantitative and qualitative)
Warranted assertion analysis	Reviewing all qualitative and quantitative data in order to yield meta-inferences
Data importation	Using follow-up findings from qualitative analysis to inform quantitative analysis, or follow-up findings from quantitative analysis to inform qualitative analysis

Table 3.7: Cross-Over Analysis Strategies (Onwuegbuzie &amp; Combs 2010)

### 3.2.5 The Rigours of Mixed Methods

Creswell & Zhang (2009) noted that rigorous mixed methods require validity for both aspects of the quantitative (threats to internal validity, external validity and design validity) and aspects of the qualitative (trustworthiness, authenticity, member checking and so on). Additionally, good research designs involve rigorous quantitative and qualitative data collection, analysis, and procedure (Clark & Creswell 2008).

### 3.2.6 Validity of Mixed Methods

Johnson and Onwuegbuzie (2004) pointed out that assessing the validity of findings was complex. The authors recommended that validity in mixed research be named legitimation. Different types of legitimation for mixed methods are presented in Table 3.8. This study has attempted to achieve legitimation for this mixed research by means of inside-outside legitimation, weakness minimisation legitimation and multiple validities.

Typology of Mixed Methods Legitimation Types	
Legitimation Type	Description
Sample integration	Generalising from the sample and providing quality meta-inferences by pulling together inferences from the qualitative and quantitative phases; one way is to use non-dominant design, leading to strong inferences (dominant phases) and weak inferences (less dominant phases)
Inside-outside legitimation	Using <b>both insider's views and observer's views</b> to review the data and integration, such as description and explanation
Weakness minimisation legitimation	Compensating for the weakness of one approach with strengths from the other approach
Sequential legitimation	Affecting meta-inferences by reversing the sequence of the qualitative and quantitative phases
Conversion	Carefully scrutinising the meta-inferences of the data
Paradigmatic mixing	Using both viewpoints in a study
Commensurability	Switching from the qualitative lens to the quantitative lens and back again
Multiple validities	Utilising all research strategies within the research and considering multiple relevant validities
Political	Dealing with distributed power in planning, conduct and the use of research in order to find workable solutions or answer the questions

Table 3.8: Types of Legitimation for Mixed Research (Johnson &amp; Onwuegbuzie 2004)

### 3.2.7 Limitations of Mixed Methods Research

Mixed methods research requires researchers who are familiar with both the qualitative and quantitative paradigms (Doyle et al. 2009). Accordingly, mixed methods researchers must have sufficient and accurate research skills in both qualitative and quantitative techniques. Table 3.9, below, shows some strengths and weaknesses of mixed methods research.

Strengths	Weaknesses
<ul style="list-style-type: none"> <li><b>Ability to use numbers as well as adding accurate words, pictures, insight, meaning and narrative</b> (Johnson &amp; Onwuegbuzie 2004; Johnson et al. 2007).</li> <li><b>Improvement of performance in one method</b> by using the strength of mixed quantitative and qualitative research (Tashakkon &amp; Teddlie 2010; Creswell &amp; Plano Clark 2011; Plowright 2011).</li> <li><b>Ability to produce and examine a grounded theory</b> (Morgan 1998; Creswell et al. 2003).</li> <li><b>Stronger evidence for conclusions due to convergence or confirmation</b> (Doyle et al. 2009; Creswell &amp; Plano Clark 2011; Plowright 2011).</li> <li><b>Meaningful and deeper answers to a broader range of questions</b> (Polit &amp; Beck 2008; Creswell 2009).</li> <li><b>Ability to solve debate between philosophies</b> (Creswell &amp; Plano Clark 2007; Greene 2008).</li> <li><b>Ability to increase the generalisability of results</b> (Morgan 1998; Parahoo 2006).</li> <li><b>Production of more complete knowledge</b> needed to inform theory and practice (Tashakkon &amp; Teddlie 2010; Plowright 2011).</li> <li><b>Overcoming the limitation of conducting a single technique</b> (Creswell et al. 2003; Teddlie &amp; Tashakkori 2009).</li> <li><b>Development of researcher skills and knowledge</b> related to both types of research (Weaver &amp; Olson 2006; Polit &amp; Beck 2008).</li> <li><b>Production of knowledge related to human experiences</b> (Leech &amp; Onwuegbuzie 2007; Onwuegbuzie &amp; Combs 2010).</li> <li><b>Making health studies more practical</b> (Morgan 1998; Polit &amp; Beck 2008).</li> <li><b>Validated, comprehensive, internally consistent explanations for findings</b> (Doyle et al. 2009; Feilzer 2010).</li> <li><b>Better and richer understanding of phenomena</b> (Johnson et al. 2007; Haines 2011).</li> <li><b>A different way of describing the concept</b> (Onwuegbuzie &amp; Leech 2004; Lisle 2011).</li> <li><b>Control over threats to validity and improvement in validity of data</b> (Bryman 2006; Polit &amp; Beck 2008).</li> </ul>	<ul style="list-style-type: none"> <li><b>Difficulties trying to carry out both qualitative and quantitative studies</b> (Doyle et al. 2009; Feilzer 2010).</li> <li><b>Method requires researcher to develop new research skills</b> (Haines 2011; Lisle 2011).</li> <li><b>One paradigm favoured: research tends to work within either a qualitative or a quantitative paradigm</b> (Morgan 1998; Polit &amp; Beck 2008).</li> <li><b>More expensive than single method research</b> (Bryman 2006; Parahoo 2006).</li> <li><b>More time consuming than single method research</b> (Creswell et al. 2003; Johnson et al. 2007; Greene 2008).</li> <li><b>Conflict with interpretation of results</b> during data analysis (Johnson &amp; Onwuegbuzie 2004; Johnson et al. 2007).</li> <li><b>Conflict between paradigms</b> (Johnson et al. 2007; Greene 2008).</li> </ul>

Table 3.9: Strengths and Weaknesses of Mixed Methods Research

### 3.3 Mixed Methods Design Consideration in This Study

Research is a systematic inquiry for expanding knowledge in terms of planning and organising to a specific goal; in this study, it allowed identification of the necessary content for developing and designing a training package and assessing its effectiveness in enhancing knowledge of and attitudes to the importance of the play environment among Thai nursery workers.

This particular study employed a mixed methods research design which contained both qualitative and quantitative data collection in order to achieve the overall research aim. The decision was to use a pragmatic paradigm, as it would provide an improved understanding of the research problem and allow the research to be conceptualised holistically (Creswell 2009; Creswell & Plano Clark 2011). A mixed methods intervention design, utilising a sequential embedded quasi-experimental design, would allow the study to embed qualitative data within experimental research (Edmonds & Kennedy 2013). Sequential mixed methods research refers to an investigation in which the phases of the research occur in a consecutive order, with one phase emerging from or following the other. The research questions addressed, as well as the procedures used in a phase, depend on the previous phase (Teddlie & Tashakkori 2009).

This researcher designed a multiphase research project (see Figure 3.2) that was divided into two phases, Phase I and Phase II. Each phase was then subdivided into two parts: part A and part B. In both the quantitative and qualitative phases, the researcher chose settings, groups and individuals that represented a sample, in two or more stages. In Phase II, the first stage involved random selection and the following stages involved purposeful selection of participants. This is referred to as multistage purposeful random selection (Collins et al. 2006).

In Phase I, the purpose was to design a multimedia teaching package (MMTP), following a critique of one Thai and three UK curricula using a summative content analysis. The exploratory-sequential approach to instrument development design, using a qualitative and quantitative method, was then identified. Therefore, this researcher collected qualitative data before an intervention trial. There were two parts:

Part A: Following a critique relating to the amount of time dedicated to the play environment in one Thai and three UK nursery worker training curricula, using content analysis, the content of the MMTP was designed.

Part B: The research instrument or research tool was designed. Following this design, which was based on the reliability and validity of intervention and

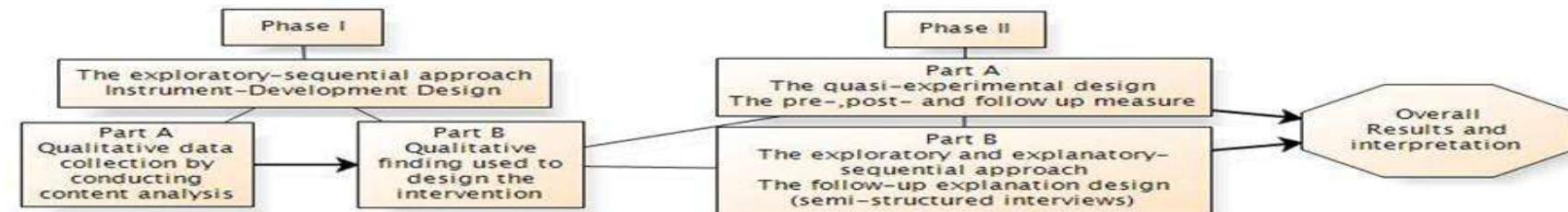
instrument measuring, the researcher piloted the instrument with a sample group in Thailand.

In Phase II, the purpose was to evaluate the effectiveness of the MMTP in improving attitudes and knowledge among Thai nursery workers.

Part A: The researcher employed a quantitative method (quasi-experiment). A pre-test and post-test design was employed with the intervention and control groups in order to evaluate the effectiveness of the MMTP in improving the attitudes and knowledge of Thai nursery workers about the importance of the play environment in nurseries.

Part B: Qualitative semi-instructed interviews were used to collect qualitative data after completion of the second post-test questionnaires. The results were analysed four weeks after the MMTP training. The researcher then purposefully sampled from the intervention group, choosing eight nursery workers to invite to the semi-structured interviews. The purpose of the semi-structured interviews was to further explore and expand on the quantitative results. The outcomes **allowed the researcher to further understand nursery workers' points of view**, enhanced the quantitative findings and facilitated exploration of the reasons why change did or did not happen. In addition, **the participants' opinions of the MMTP training allowed analysis and description of nursery workers' attitudes towards** different phenomena in their surroundings, which could be determined to confirm or disconfirm the hypothesised impact of the intervention.

The results from both the quasi-experiment and the semi-structured interviews were consolidated in order to evaluate the effectiveness of the MMTP. The researcher also analysed the qualitative data after the conclusion of the quasi-experiment in order to find solutions to the research question and make suitable adjustments to the MMTP training to aid in its further development. This mixed method is briefly illustrated in Figure 3.2.



Procedures Phase I:	Procedures Phase II:	Procedures: Overall
<b>Part A:</b> <ul style="list-style-type: none"> <li>Content analysis of one Thai and three UK curricula</li> <li>Converting content to numerical data by counting key words and comparing the numerical data</li> <li>Coding and content analysis</li> <li>Identifying elements to be used in developing the intervention</li> </ul>	<b>Part A:</b> <ul style="list-style-type: none"> <li>Three groups: one group received the MMTP training (the Lampang intervention group), one received no training (the Lampang control group) and one received the official government training (the Nonthaburi control group).</li> <li>Outcome measures: 1) Knowledge MCQs 2) Attitudes Likert Scales</li> <li>Measurement completed three periods: before training (pre-test), immediately after training (first post-test) and four weeks after training (second post-test)</li> </ul>	<ul style="list-style-type: none"> <li>Discussion of treatment effectiveness</li> <li>Discussion of themes in context of interventions and outcomes</li> <li>Interpretation and explanation of the quantitative and qualitative results</li> </ul>
<b>Part B:</b> <ul style="list-style-type: none"> <li>Development of an intervention instrument (the multimedia teaching package)</li> <li>Development of data collection instruments (Knowledge MCQs, Attitudes Likert Scales)</li> <li>Pilot study of intervention and data collection instruments</li> </ul>	<b>Part B:</b> <ul style="list-style-type: none"> <li>Face-to-face semi-structured interviews with eight participants</li> <li>Text data (interview transcripts)</li> <li>Coding and thematic analysis within-case and across-case theme development</li> <li>Cross-thematic analysis</li> </ul>	<b>Products:</b> <ul style="list-style-type: none"> <li>Discussion</li> <li>Implications</li> <li>Future research</li> </ul>

Figure 3.2: Overview of the Mixed Methods Research Design Utilising a Sequential Embedded Quasi-Experimental Design (Creswell & Plano Clark 2011; Edmonds & Kennedy 2013)

### 3.4 Research Methods in Phase I: Part A

The aim of the first phase was to ascertain the extent to which contemporary curricula covered the training required for this study. The result of this content analysis would be used to design the multimedia teaching package (MMTP). Here, the development of the content analysis will be delineated and the basic principles explained. Following this, the central procedures of qualitative content analysis - inductive development of categories and deductive application of categories - will be presented.

#### 3.4.1 Research Design in Phase I: Part A

As this researcher was interested in developing both an intervention and data collection instrument, the exploratory-sequential approach was employed in this phase by using the qualitative (exploratory) findings to help construct the instrument. In the second phase, as part of the subsequent quantitative approach, the efficiency of the instrument was validated and tested (Creswell & Plano Clark 2011).

Figure 3.3 shows how the first phase of this study ascertained the extent to which contemporary curricula covered the training required for this study. A content analysis of material pertinent to the play environment was conducted on one Thai and three UK curricula.

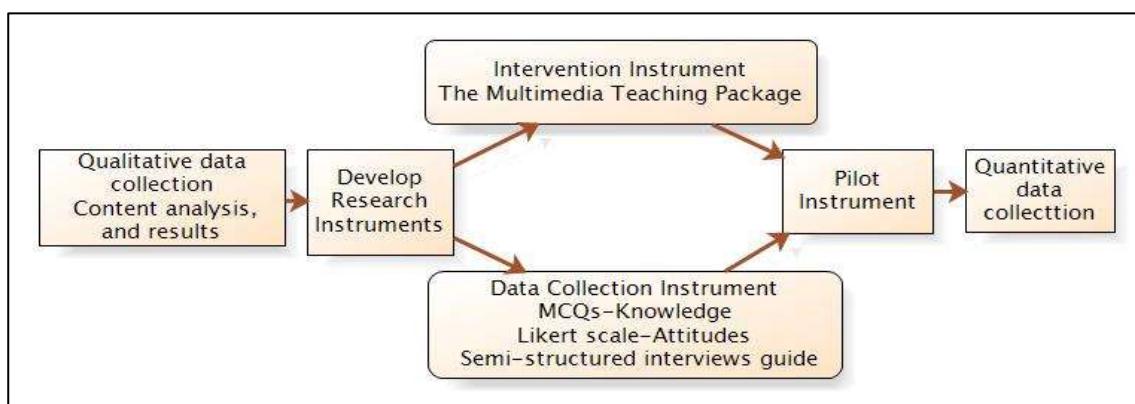


Figure 3.3: Instrument-Development Design (Creswell & Plano Clark 2011)

#### 3.4.2 Content Analysis

Content analysis consists of qualitative and quantitative research, as it is an **investigation of 'message' which may include a sender, a receiver, and the response** of a receiver (Krippendorff 1980). It is a basic analysis which involves counting how often an **'instance'** occurs. This may be a) a particular word or phrase, such as 'play and

environment' in this study, or b) a semantic (meaning) category, such as references to content, object, concept of play and environment.

Neuendorf (2002) defined content analysis as a research technique for an approach to the analysis of documents and text that seeks to quantify content in terms of predetermined categories and in a systematic and replicable manner (Bryman 2012). Berelson (1971) suggested that content analysis is a research technique for the objective, systematic and quantitative description of the manifest content of communication or quantitative analysis of message characteristics (Neuendorf 2002).

Wesley (2009) stated that the content analysis approach can explain both the qualitative and quantitative traditions. Within the content analysis approach, there are distinct quantitative and qualitative variants (see Table 3.10)

Qualitative content analysis does not produce counts and statistical significance; instead, it uncovers patterns, themes, and categories important to a social reality. Neither does it draw a sharp separation between data collection and analysis; the two processes proceed in parallel and simultaneously, in a reflexive interaction with the text (Patton 2002).

Quantitative content analysis, on the other hand, with its clear separation of the moment of coding scheme design (in the hands of the investigator) and coding (in the hands of the coders, who are typically unaware of the broad theoretical aspects of a project), draws a sharp distinction between content analysis as a data collection technique and data to be analysed at a later phase, after data collection, through statistical data analysis perhaps carried out by the investigator but certainly not by the coders (Wesley 2009).

Element of Inquiry	Quantitative Tradition	Qualitative Tradition
<i>objects of observation</i>	mentions, sequences ('manifest' content)	meanings, motives, purposes ('latent' content)
<i>units of observation</i>	segments of text	whole texts
<i>procedures of observation</i>	counting, rating, logging	themeing, tagging, memoing
<i>discovery of patterns</i>	calculated during analysis	developed throughout process
<i>presentation of data</i>	graphs, tables, statistics, figures, word clouds	quotations, concept maps, narrative

Table 3.10: The Two Traditions of Content Analysis (Wesley 2009)

According to Zhang and Wildemuth (2009), qualitative content analysis emphasises an integrated view of speech/text and its specific context. Qualitative content analysis goes beyond merely counting words or extracting objective content from texts in order

to examine meanings, themes and patterns that may be manifest or latent in a particular text. It allows researchers to understand social reality in a subjective but scientific manner.

Content analysis has both advantages and disadvantages (see Table 3.11)

Advantages of Content Analysis	Disadvantages of Content Analysis
<ul style="list-style-type: none"> <li>Content analysis is a very transparent research method. The coding scheme and the sampling procedures can be clearly set out so that the replications and follow-up studies are feasible</li> <li>It allows a certain amount of longitudinal analysis with relative ease</li> <li>Content analysis is often referred to favourably as an unobtrusive method</li> <li>It is a highly flexible method. It can be applied to a wide variety of kinds of unstructured information</li> <li>Content analysis allows information to be generated about social groups to which it is difficult to gain access</li> </ul>	<ul style="list-style-type: none"> <li>Content analysis can only be as good as the documents on which the practitioner works</li> <li>It is almost impossible to devise coding manuals that do not entail some interpretation on the part of coders</li> <li>Particular problems are likely to arise when the aim is to impute latent rather than manifest content</li> <li>It is difficult to ascertain the answers to 'why' questions through content analysis</li> </ul>

Table 3.11: Comparing Advantages and Disadvantages of Content Analysis (Bryman 2012)

### 3.4.3 The Reasons for Using Content Analysis

**It has been recognised that play is essential for children's development since it plays an important role in influencing their learning ability (Stagnitti 2004; Ginsburg et al. 2007; Barnett et al. 2008; Saracho 2010).** Consequently, adults need to encourage children in their play (Samuelsson & Johansson 2006) and recognise when to be involved and when to intervene in play activities (Marjanović Umek & Lesnik Musek 2001). This is to ensure that children gain as much benefit as possible (Lloyd & Howe 2003; Vickerius & Sandberg 2006; Ginsburg et al. 2007).

This study, as a result, aimed to determine the extent to which Thai nursery workers understand the importance of play for children and the play environment. Although little of the literature related to the research topic is based in Thailand, this researcher was able to find associated information in order to carry out a comparison with the Western literature.

Content analysis is a suitable method for cross-linguistic studies (Twinn 1997; Ny et al. 2008); through it, the researcher would be able to understand the similarities and differences in what is taught about the play environment in the UK and Thailand. It was envisaged that a summative content analysis of one Thai and three UK curricula would demonstrate the amount of information covered by the UK and Thai curricula

regarding the play environment, the ways that play environment topics are covered and taught in training and the structural characteristic concepts of the play environment. Therefore, a summative approach to qualitative content analysis was chosen.

#### 3.4.4 Process of Collecting Data from Content Analysis

Hsieh & Shannon (2005) discussed the three approaches to qualitative content analysis based on the degree of involvement of inductive reasoning: conventional, directed and summative (see Table 3.12). These approaches are all used to interpret meaning from the content of text data, following the naturalistic paradigm in order to make this interpretation. The major differences between the approaches are coding schemes, origins of codes, and regulation in order to ensure trustworthiness. In conventional content analysis, coding categories are derived directly from the text data. With a directed approach, analysis starts with a theory or relevant research findings as guidance for initial codes. A summative content analysis involves counting and comparisons, usually between key words or content, followed by the interpretation of the underlying context (Hsieh & Shannon 2005).

Type of Content Analysis	Study Starts With	Timing of Defining Codes or Key Words	Sources of Codes or Key Words
Conventional content analysis	Observation	Codes are defined during data analysis	Codes are derived from data
Directed content analysis	Theory	Codes are defined before and during data analysis	Codes are derived from theory or relevant research findings
Summative content analysis	Key words	Key words are identified before and during data analysis	Key words are derived from interest of researchers or review of literature

Table 3.12: Major Coding Differences between Three Content Analysis Approaches  
(adapted from Hsieh & Shannon, 2005).

In this phase, the summative content analysis approach was undertaken to identify and quantify certain themes from the text data and infer meaning from the given context derived from the review of the literature. It has certain advantages, including the counting of words or manifest content that extends the analysis to include latent meanings and themes (Hsieh & Shannon 2005). This approach seems quantitative in the early stages, but its goal is to explore the usage of the words or indicators in an inductive content analysis (O'Donoghue et al. 2011). Inductive content analysis implies that categories are derived inductively from the texts being analysed, and involves open coding, creating categories and abstraction (Elo & Kyngäs 2008). The themes and categories for this process emerge from the data, through the researcher's careful examination and constant comparison (Zhang & Wildemuth 2009). However, Patton

(2002) suggested that qualitative content analysis should include deductive reasoning. Generating concepts or variables for deductive analysis from theories, recommendations, and literature reviews or previous studies is also highly useful for qualitative research, especially at the inception of data analysis (Hsieh & Shannon 2005; Polit & Beck 2010).

In this study, both inductive and deductive approaches were conducted when constructing the coding scheme. This combination of content analysis is considered to be the most realistic form of analysis that uses theory and literature to direct the framework (Patton 2002). The matrix of analysis was unconstrained, thus different subcategories could be created within its bounds, following the principles of inductive analysis (Elo & Kyngäs 2008).

### 3.4.5 Content Analysis of Data in Phase I: Part A

In order to answer the research questions, it was important to find out a) how much **information about the play environment is covered in nursery workers' training and b)** the structural characteristic concepts of the play environment within the UK and Thai curricula. For this reason, this researcher applied a summative content analysis to one Thai and three UK curricula. The results of this content analysis would facilitate design of the research instrument and form the basis of a multimedia teaching package (MMTP) for training Thai nursery workers.

Figure 3.4 illustrates the process of qualitative content analysis, divided into the eight steps indicated by Zhang & Wildemuth (2009). This process often begins during the early stages of data collection and involvement in the analysis phase.

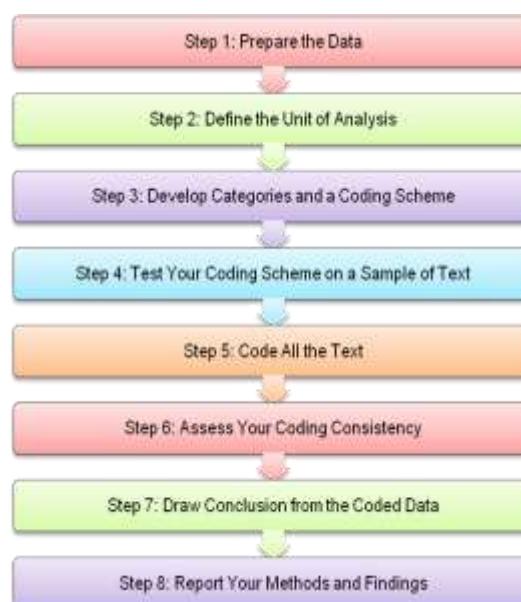


Figure 3.4: The Process of Qualitative Content Analysis (Zhang & Wildemuth 2009)

### 3.4.6 Curricula Sample

A summative content analysis of one Thai and three UK curricula was carried out as part of the qualitative study to determine the level of knowledge of the play environment gained by nursery workers. Four curricula were compared:

1. The Business and Technology Education Council (BTEC): Edexcel Level 2 BTEC **First Certificate and Edexcel Level 2 BTEC First Diploma in Children's Care, Learning and Development 2007**
2. The Council for Awards in Care Health and Education (CACHE) Level 2 Award/Certificate/Diploma in Child Care and Education 2009/10
3. The CACHE Level 2 Award/Certificate/Diploma in Playwork 2009/10
4. **The curriculum contained in the Thai nursery workers' manual used in training workshops organised by the Department of Local Administration (DLA), Thailand (a photocopied document)**

#### 3.4.6.1 Step 1: Preparing the Data

Appendix 3.1 shows a comparison between the one Thai and three UK curricula across six general information topics: qualification, guided learning hours (GLH), core content, entry requirement, fee and assessment. This comparison shows that the **Thai nursery workers' manual has scant information on most topics. The Thai training workshop** curricula did not focus on giving nursery workers the ability to create a suitable play environment, learning outcomes or an assessment criterion.

Appendix 3.2 shows the comparison of all unit titles and total guided learning hours (GLH) between the one Thai and three UK curricula. In the Thai training workshop, the total is only 37 hours over six days, while the three UK curricula last for two years when studied full-time or longer when studied part-time.

#### 3.4.6.2 Step 2: Defining the Unit of Analysis

The researcher selected unit titles from four curricula related to play and the play environment. Table 3.14 shows the selection of the unit titles from the four curricula studied. The results illustrate that there are two units of 120 guided learning hours (GLH) in BTEC, three units of 180 GLH in CACHE Level 2 (Child Care and Education) and three units of 50 GLH in CACHE Level 2 (Playwork) relating to the play environment, compared with five units of 20 hours in the Thai workshop. However, the unit titles in the Thai workshop did not contain words directly related to the play environment, and the number of learning hours in the Thai workshop was lowest. The three UK curricula contain significantly more guided learning hours than the Thai curriculum.

Unit No.	Unit Title								
	United Kingdom					Thailand			
	BTEC Edexcel Level 2 BTEC First Diploma in <b>Children's Care</b> , Learning and Development 2007	G L H	CACHE Level 2 Award/Certificate/ Diploma in Child Care and Education 2009/10	G L H	CACHE Level 2 Award/Certificate/ Diploma in Playwork 2009/10	G L H	Workshop for nursery workers in childcare centre organised by the Department of Local Administration (DLA)	Hours	
1	Preparing and Maintaining Environments for Child Care	60	Safe, healthy and nurturing environments for children	60	<b>Children's play and playwork</b>	15	How the brain is developed by the environment and learning activities	2	
2	Supporting <b>Children's Play and Learning</b>	60	Children and play	60	Planning and supporting play	15	Classroom administration for early childhood	4	
3			Play activity for children from birth to age 16 years	60	Playwork provision that supports children and <b>young people's play and development</b>	20	Learning experience management for early childhood	5	
4							Selecting material, media and toys suitable for early childhood	5	
5							The importance of music, rhyme and circle activity for children	4	
Sum	2 units	120	3 units	180	3 units	50	5 units	20	

Note: GLH= Guided Learning Hours

Table 3.13: Selected Unit Titles from Four Curricula Related to the Study

### 3.4.6.3 Step 3: Developing Categories and a Coding Scheme

After selecting unit titles from the four curricula studied, deductive content analysis was carried out by exploring key words that related to play and the play environment. An inductive approach was used to build models or concept systems which were complemented, tested and developed further with the aid of deductive analysis.

Next, this researcher started to identify and quantify certain words or content in text with the purpose of understanding the contextual use of the words or content (Hsieh & Shannon 2005). This quantification was an attempt not to infer meaning but rather to explore usage. The initial part of the analysis technique, which involved counting the frequency of occurrences relating to play environment, would be more accurately viewed as a quantitative approach. In order to determine the frequency of words relating to play and the play environment within the one Thai and three UK curricula, both qualitative and quantitative content analysis was conducted.

Following this, the researcher counted the pages that covered specific topics, followed by descriptions and interpretations of the content, which included evaluating the quality of the content. Counting is used to identify patterns of data and to contextualise the codes (Strijbos et al. 2006). It allows for interpretation of the context associated with the use of the word or phrase. An instance of a theme might be expressed in a single word, a phrase, a sentence, a paragraph or an entire document (Zhang & Wildemuth 2009). This technique enables the identification of certain themes from the text data, as well as the inference of meaning from the given contextual aspect of the play environment.

Key words in each curriculum were then identified and quantified without interfering with the meaning; only usage was observed in the unit of analysis. Their use was explored in the subsequent analysis.

Appendix 3.3 presents the frequencies of key words in the text pertaining to the play environment, comparing the one Thai and three UK curricula. The analysis of the appearance of a particular word or content in textual material is referred to as manifest content analysis, which includes latent content analysis. Latent content analysis refers to the process of interpretation of content. The focus is on discovering the underlying meanings of words or content. Appendix 3.3 indicates a lack of explicit play and play environment content in the Thai training workshop manual, which is thus identified as absent or needing further emphasis. The integration, therefore, would be based on a maximum of four areas. The objectives of the Thai curriculum were not adequate.

#### 3.4.6.4 Step 4: Testing the Coding Scheme on a Sample of Text

Data has been defined as a systematic, replicable technique for compressing words in a text into fewer content categories based on explicit rules of coding (Hsieh & Shannon 2005). This study used the NVIVO software programme (Richards 1999) to assist in organising, managing, and coding the qualitative data in a more efficient manner. This programme can apply to the entire corpus of text. During the coding process, the researcher checked the coding repeatedly with two other Ph.D. students in order to achieve a sufficient consistency of data.

#### 3.4.6.5 Step 5: Coding All the Text

After the four curricula were coded, the coding consistency needed to be checked, in most cases through an assessment of inter-coder agreement. To meet the sufficient coding consistency, the researcher coded all data text, checked coding consistency, and revised coding rules in a continuously iterative process. If the level of consistency was low, the coding rules had to be revised. Doubts and problems concerning the definitions of categories, coding rules or categorisation of specific cases had to be discussed and resolved between this researcher and two other Ph.D. students.

#### 3.4.6.6 Step 6: Assessing Coding Consistency

After constructing the coding scheme for the four curricula and rechecking the consistency of the coding, the researcher created different subcategories including meaning and reliable manner. The themes and categories from this process emerged **via the data from the researcher's careful examination and constant comparison**. Human coders are subject to fatigue and are likely to make more mistakes as the coding proceeds. New codes may have been added since the original consistency check. **In addition, the coders' understanding of the categories and coding rules may have changed subtly over time, which can lead to greater inconsistency.**

#### 3.4.6.7 Step 7: Drawing Conclusions from the Coded Data

Finally, the underlying meaning, i.e. the latent content of the categories, was articulated into a theme. Thereafter, following Graneheim & Lundman's (2004) claim that a theme can be gained through condensed meaning, units, codes and categories referring to the same content were divided into the same codes.

During the analysis, the various codes were examined for differences and connections and sorted into subcategories (see Table 3.15) (Krippendorff (2004)). The categories used in this study were exhaustive and mutually exclusive, meaning that no data relating to the purpose were excluded due to a lack of suitable categories, and that no data fell between two categories or fitted into more than one category. This content

analysis provides the main components used to create a multimedia teaching package (MMTP).

This step shows findings discovered from three main categories of texts:

1. The role of adults in childcare
2. Importance of play and the play environment
3. How child development is affected by play

The subcategories (deductive) remained within each of the main categories, while the three categories were introduced as part of an inductive approach.

Subcategories	Main Category
<ul style="list-style-type: none"> <li>• <b>Encouragement and supervision of children's play/stimulation of play and environment</b></li> <li>• Preparing and maintaining the play environments</li> <li>• Planning and supporting play</li> <li>• The role of the environment and care routines</li> <li>• <b>Supporting children's play and learning</b></li> <li>• A play provision/providing an environment</li> <li>• Safe, secure environment/nurturing environments for children</li> <li>• <b>A variety of settings and environments/children's freely-chosen play/choice of play/variety of play/supporting choice for play</b></li> <li>• Play setting</li> <li>• Play spaces/a play space</li> <li>• The appropriateness of the environment/an interesting and exciting environment/the accessibility and inclusiveness of the environment</li> <li>• Play environment</li> <li>• Social environment</li> <li>• Nature of environment</li> <li>• Environmental regulations</li> </ul>	Adult roles
<ul style="list-style-type: none"> <li>• The importance of play</li> <li>• <b>All aspects of children's play/aspects of play/how children play</b></li> <li>• The different types of play/types of play environment/a range of play types/types of play</li> <li>• The stages of play/the main stages of play cycle</li> <li>• The main theories of play</li> <li>• The development of play</li> <li>• The right to play</li> <li>• Play needs/play opportunities/play requests</li> <li>• Play cues</li> <li>• The content of play</li> <li>• An adventure play area/risk and challenge in play</li> <li>• Self-directed play/the role of self-directed play</li> <li>• Integrate play</li> <li>• Play activities/five different play activities/choice of play activities/a play activity</li> <li>• <b>Children's environments/a resource for play/materials for play/the play materials/resources for play/a variety of play setting</b></li> </ul>	The importance of play and the play environment
<ul style="list-style-type: none"> <li>• Development through play/play and development/the play and development of children</li> <li>• The role of play</li> <li>• Imaginative and creative play</li> <li>• Physical environment</li> <li>• Importance of providing physical play</li> <li>• Exploratory play</li> <li>• The use of clear speech and plain language adaptation of the environment</li> <li>• Physical play</li> </ul>	Development of all aspects of child development through play

Table 3.14: Main Categories and Subcategories of Content Analysis Results

### 3.4.6.8 Step 8: Reporting Methods and Findings

The content analysis revealed that the Thai curriculum contained inadequate content relating to the play environment. Thus, the researcher made inferences and presented reconstructions of meanings derived from the whole data, which involved exploring the properties and dimensions of categories, identifying relationships between categories, uncovering patterns and testing categories against the full range of data.

The content analysis of the curricula identified that the multimedia teaching package (MMTP) should include the following three components:

1. The professional role of Thai nursery workers
2. The importance of play and the play environment
3. Promoting child development through play activities

### 3.4.7 Content Analysis Findings

The content analysis of one Thai and three UK curricula was carried out as part of the qualitative study to determine how much knowledge of the play environment nursery workers gain.

As described above, the data from the curricula were analysed using the summative content analysis, which has been defined as a systematic, replicable technique for compressing words in a text into fewer content categories based on explicit rules of coding (Hsieh & Shannon 2005). This technique enables identification of certain themes from the text, as well as an inference of meaning from the given contextual aspect of the play environment. All subcategories were classified into three categories. The most frequently occurring category across all curricula was adult roles, followed by the importance of play, the play environment and child development through play.

The results of this content analysis would form the basis of the MMTP. Table 3.15 (page 95) presents the three categories and their subcategories. Following the content analysis, the curricula were re-assessed by the coders. Agreement about the categories was reached by consensus.

### 3.4.8 Trustworthiness and Authenticity in Phase I: Part A

In research, every study must be evaluated in relation to the procedures used to generate the findings (Graneheim & Lundman 2004).

The use of concepts to describe trustworthiness differs between the qualitative and quantitative research traditions, so the same method cannot be used to verify the

findings. Within the tradition of qualitative content analysis, the use of concepts related to the quantitative tradition, such as validity, reliability and generalisability, is still common (Downe-Wamboldt 1992; Patton 2002; Polit & Beck 2008; Zhang & Wildemuth 2009; Lincoln & Guba 2011).

In order to establish trustworthiness in qualitative research, Lincoln and Guba (1985) proposed four criteria for evaluating interpretive research: credibility, transferability, dependability and confirmability.

The results from content analysis should be as trustworthy as possible; every researcher must determine the procedures and generate the same results (Graneheim & Lundman 2004; Zhang & Wildemuth 2009). Neuendorf (2002) and Krippendorff (2004) suggest that reliability translates to inter-coder reliability when human coders are used in content analysis or when there is an agreement or correspondence between two or more coders.

For the results of this phase, a paediatrician (Ph.D.) with more than ten years of experience as a lecturer at the Department of Paediatrics, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand was invited to be the coder. The two results obtained from the coder and the researcher were compared with each other and blinded to the numerical codes, and all of the coding words were independently classified into the three categories in order to assess inter-rater variation. The stability or intra-rater reliability was achieved by the researcher at different times. A different coder was used for reproducibility, or inter-rater reliability, meaning that the coding systems led to the same text being coded in the same category by different people. Both inter- and intra-coder agreement for content analysis was implemented for all curricula (Krippendorff 2004). Table 3.15 shows the three main categories and 39 subcategories that were identified with satisfactory inter-coder reliability.

### 3.5 Research Methods in Phase I: Part B

The results of the content analysis were used to construct a multimedia teaching package (MMTP). Phase I: Part B aimed to construct and develop the research instruments then test and improve them. Discussion of this phase is divided into five sections. The first section will cover the design of the MMTP, the intervention instrument in this study. The second and third sections will focus on the design of the questionnaires, which included multiple choice questions for measuring knowledge and a Likert scale for measuring attitudes. The fourth section will discuss the creation of the semi-structured interview guide after the MMTP training. The fifth section will describe how the content validity and reliability of these instruments was assessed.

**The evaluation of the MMTP drew on Kirkpatrick's framework described in Chapter 2.**

In deciding the level(s) of evaluation to be performed, the researcher considered the SMART principle of setting up the objective(s) of the programme. SMART objectives are those that are Specific, Measurable, Achievable, Relevant and Time-bound (US Department of Health and Human Services 2002). **Primarily, the 'Achievable' principle** determined the level of evaluation in this study; the researcher determined what could be achieved within the given study timeframe and resources. Among a number of needs identified from the literature review, appropriate play and play environments and the lack thereof in Thai childcare centres emerged as priorities. Among these priorities, the highest priority was to promote attitudes and knowledge towards the importance of play and play environments among Thai nursery workers through a one-day MMTP. Attitude and knowledge were elected as the major components of the training because they were considered achievable within the given study timeframe and resources. This objective was relevant as it addressed gaps in play and play environments in Thai childcare centres, i.e. considering nursery workers as key persons who would materialise play and play environments. The objective was considered specific as it addressed attitudes and knowledge about play and play environments. It was measurable as changes in attitudes and knowledge could be measured through the use of instruments (see Section 3.5). The evaluation of the effectiveness of the MMTP was scheduled immediately and at four weeks after the training. Essentially, the MMTP evaluation concerned learning (Level 2) (Kirkpatrick & Kirkpatrick 2006). This was carried out quantitatively through the use of pre-test and post-test within-group and between-group design (see Section 3.6). However, reactions (Level 1) and behaviours (Level 3) were also evaluated through the use of qualitative approach (see Section 3.7). While not the primary outcome of the MMTP, **assessing reactions and behaviours helped to provide information about the trainees'** perceptions of the training, the contexts in which changes in attitude and knowledge took place and barriers towards adoption and implementation of play and play-related activities. The reactions and behaviours of the MMTP trainees were assessed through the use of semi-structured interviews guided by six questions (see Table 3.20). It is of importance to note here that the MMTP evaluation did not include the evaluation of the results (Level 4) as they were beyond the scope of this study, which was solely aimed at promoting attitude and knowledge. This is subject to further study with interventions specifically targeting these results. Figure 3.5 illustrates an overview of this research instrument.

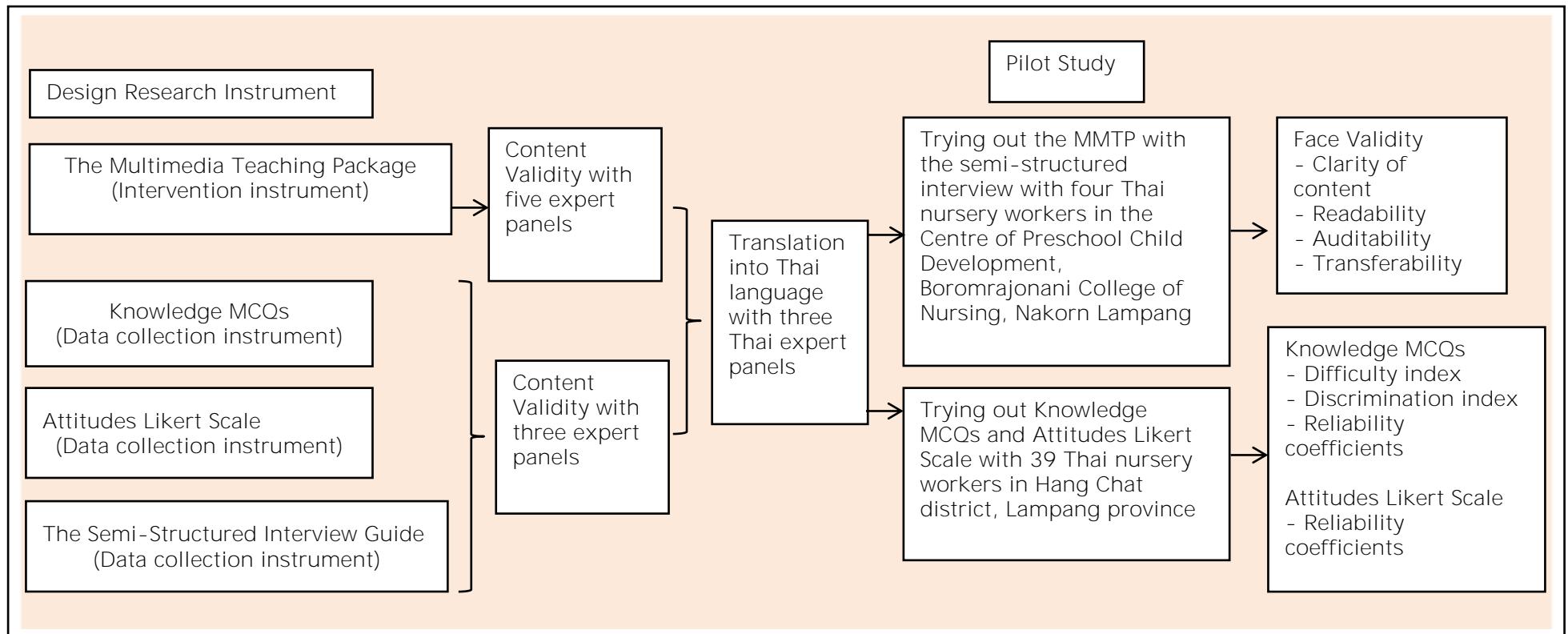


Figure 3.5: Design of the MMTP and Pilot Testing of the Questionnaires

### 3.5.1 Designing of the Multimedia Teaching Package

The results of the content analysis facilitated the design of research intervention instruments; the main instrument was a multimedia teaching package (MMTP) technique. This was developed, based on theory, directed training experience and content analysis findings, in order to train nursery workers in Thailand.

#### 3.5.1.1 What is the Multimedia Teaching Package?

The multimedia teaching package (MMTP) is a guideline or instructional training plan with the purpose of providing a learning experience in order to enhance knowledge and attitudes about the play environment that could suitably be applied to the nursery work situation. The MMTP involved using a variety of teaching materials and methods to communicate a message through training.

The MMTP was developed by this researcher based on the results of the summative content analysis described above. It consists of purposes (objectives), contents, implementation (instructional procedure) and evaluation. The full details of the MMTP are illustrated in Appendix 3.4; the one-day training is summarised within a DVD (attached to the thesis). The DVD summarises the steps of the MMTP implemented in **this study and was originally for the examiners' viewing only (as evidence of the researcher's fieldwork)**. Readers who wish to explore or implement the MMTP should study the MMTP Training Session Plan included in the thesis or contact the researcher as the DVD does not provide all of the details required for effective implementation of the programme.

This researcher received help from the University iSolutions team in designing and developing the teaching package.

#### 3.5.1.2 Overview Content of the MMTP (Full Details in Appendix 3.4-3.5)

This MMTP training aimed to give nursery workers a knowledge and understanding of how to support and encourage children in the following three main areas:

1. To prepare and maintain a safe, warm, secure and encouraging environment **for childcare that builds children's confidence and resilience. This can be done** by acknowledging achievement, ensuring consistency, helping children to socialise and cope with change, managing conflict when working with children and integrating play.
  - To know the role of the adult in providing play activities for children (reflecting on and improving **one's** practice).

2. To promote and support all aspects of children's play and learning by also introducing:

- The value of play as a vehicle for learning for children of different ages, stages and abilities.
- How to encourage and supervise different types of play.

3. To provide appropriate play and learning experiences for children and promote their holistic development.

- To encourage children to explore and investigate through play; to know the resources required, the nature of adult encouragement and the integration of play, and the stimulation of children.
- **To learn how to provide for and support children's imaginative, creative, physical, emotional, social, autonomous and language play through the provision of resources, encouragement of children and appropriate intervention.**

A) Component 1 of the MMTP: The Professional Role of Thai Nursery Workers (Information to Support the Lesson Plan)

It has long been recognised that play is essential for the development of children and that children develop and learn through it. It is therefore important for adults to be as effective as possible in making provision for play, encouraging children in their play and knowing when to be involved and when to intervene in play activities in order for children to gain as much benefit as possible. The role of the adult focuses on the **complex role that adults have in supporting children's play**.

Nursery workers are qualified, enthusiastic and caring. They encourage children to learn through activities that are appropriate to their age and stage of development. In nursery, children have very good opportunities to learn about other cultures and to develop a respect for the feelings and beliefs of others in a culturally rich and diverse environment. They can usually choose from several activities and can play alone or in small groups. The whole group often comes together for songs, stories, or **other 'circle time' activities. The class will also provide periods of unstructured playtime where the children can choose where, what and who to play with.**

Nursery workers offer a stimulating environment, promoting each child's positive self-image and the value of others and carefully enriching children's interests in many areas, encouraging enjoyment whilst learning through play.

A nursery worker's role is to promote play which encourages and supports all aspects of child development, for example by providing a diverse range of toys within the play environment for children aged over two years old, who are usually full of imagination while playing. When nursery workers play with children, they should show their feelings by means of happiness, humour and excitement. By focusing on children's play, they can observe their development and help them to improve their weaker points. Children will learn to develop their ability to think and play amongst themselves, enabling them to be more enthusiastic and have fun.

B) Component 2 of the MMTP: The Importance of Play and the Play Environment  
(Information to Support the Lesson Plan)

The National Strategies (2009) set out by the Department for Children, Schools and Families in the UK show that many forms of play help children to become confident learners in the future. Play provides the opportunity for children to explore, imagine, create and solve problems in a way that comes naturally to them (Bruce 2005; Moyles 2005). Children learn about the world around them through play; therefore it is vital to understand how valuable play is to child development.

However, as modern life has led to a reduction in free play opportunities, creating an '**optimal developmental milieu' should be actively encouraged** (Ginsburg et al. 2007). In recognition of this, play has been a well-established curriculum component of English childhood education (Gmitrova et al. 2009). In England, most childcare providers use high quality play to encourage children's Social, Physical, Intellectual, Creative and Emotional development (SPICE) (The National Strategies 2010). (The National Strategies 2010). It is also important to note that play provides children with an opportunity to communicate and interact with others, which can in turn improve their language use and self-regulation (Grossman 2007; Bodrova et al. 2013; Weisberg et al. 2013). When choosing what, how and when to play, children are exercising self-reliance, independence, self-confidence and responsibility. These known benefits of play were carefully considered within the findings from the 2008-2009 National Survey of Health of Thai Children, which showed that delayed language development had become more prevalent among Thai children aged between one and two years (Aekplakorn et al. 2010). The same survey showed that a significant portion of Thai children aged between two and five years were considered shy or hostile to others. Theoretically, the latter indicated a lack of self-control and self-esteem, which are essential characteristics of autonomy, among these children. **UNESCO Bangkok's report on 'Early Childhood Care and Education in South-East Asia'** (de Los Angeles-Bantista 2004) identified certain cultural misunderstandings about the nature of child development which in turn formed major obstacles to early childhood development (i.e. autonomy) in Thailand. Thai children are subjected to parental control as they are

viewed as passive and dependent learners. In addition, they are kept away from adults' gatherings in order not to be disruptive to adult activity. SEAMEO-INNOTECH (2011) reviewed the domains of early childhood development implemented in 11 South-East Asian countries including Thailand. The review highlighted the absence of language/communication and aesthetic/creative content from Thai early childhood development programmes. To respond to such gaps, this researcher, therefore, decided to highlight two further aspects of child development: language and autonomy. A new term for Thai nursery worker training, 'SPECIAL development', was coined (Social, Physical, Emotional, Creative, Intellectual, Autonomous and Language).

C) Component 3 of the MMTP: Promoting Child Development Through Play Activities (Information to Support the Lesson Plan)

Play is an indispensable part of children's life and characterises many of their activities. Children aged 5-10 years old experience play as extra-important, according to studies where children's perspectives of play have been emphasised (Vickerius & Sandberg 2006; Sandberg & Vuorinen 2008; Sandberg & Heden 2011).

According to Bronfenbrenner et al. (2001), active participation in different kinds of activities is positive as it encourages people to learn. Play is the dominant activity for children. It is significant to language, feelings, thoughts and social interplay with others (Vickerius & Sandberg 2006).

Sandberg and Vuorinen's study (2008) found that the absence of toys, media and adults in children's play can possibly be interpreted as an important prerequisite for the development of children's creativity, imagination, power of initiative and social skills. Children's creativity and imagination are challenged in different ways today, and perhaps the lack of imagination is not on the part of children but instead adults, who do not notice how new tasks are solved in new ways.

Although free play is by definition child-led, adults play a crucial role in providing suitable environments and facilitating children's experiences (Santer et al. 2007). Play activities, development and learning in this component focus on social, physical, emotional, creative, intellectual, autonomy and language development.

3.5.1.3 Using Story Bags within the MMTP as a Method of Promoting Learning (Information to Support the Lesson Plan)

Sharp (2005) and Collins (2009) defined a story bag as containing a children's picture book and supporting materials, which might include characters in the form of soft toys or puppets to help bring the story to life. It can provide a visual and tactile stimulus

that children use to take part in the telling or re-telling of the story. Adults and teachers can develop the child's listening, reading and writing skills using the contents of the story bag (Collins 2009; Hirai & Koizumi 2009; Foerster 2010; Saracho & Spodek 2010).

The selection of the specific items put into a story bag can be adjusted for any age group. The items in the story bag help to create a bridge between something tangible and newly-introduced concepts or words, as children begin to explore a story and its vocabulary. The items also provide a means for making the experiences in the story concrete and help children to connect the known to the unknown.

**Storytelling increases children's knowledge and** introduces them to new vocabulary. It also encourages them to participate actively in the learning process, and can enhance their listening skills. Fox Eades (2006) summarises the advantages of storytelling for children: it is enjoyable, creative, responsive, active, inclusive and flexible.

**Studies have examined the effects of reading storybooks on children's achievements.** The results of these studies indicate that storybook reading promotes children's language growth, emergent literacy and reading achievement (Sénéchal 2006; Hindman et al. 2008; Saracho & Spodek 2010). Collins (2009) used story boxes to enhance reading and provide a variety of activities for encouraging foreign language learning.

**A good place to start storytelling is with children's favourite stories. The storyteller can tailor the story and adapt it.** Alternatively, using very simple props to retell a story is also a good way to start. The props can include puppets, bark, shell, leaves and twigs (Fox Eades 2006; Tarr 2008).

All great learning activities enhance emotions and feelings, which can boost thinking capacity.

#### A) Developing the Story Bag to Accompany the MMTP

The story bag for this study was designed by this researcher; it was inspired by visits to Brockenhurst College in Hampshire at the start of this project, and also integrated ideas from literature reviews. Moreover, the researcher obtained valuable experience by undergoing training with Southampton Early Years Development and Childcare Partnership, organised by Southampton City Council. It was the Early Years and Childcare Workforce Development Team who created the story bag technique.

A sample story bag activity, which is part of the MMTP demonstration on the DVD, is available in the appendices.

The aim of the story bag in this study was to give Thai nursery workers the confidence to enjoy objects and play together with children. Nursery workers find it easy to create stories with the materials contained in story bags; they can successfully share toys or objects with children at a variety of levels. Nursery workers obtained a diverse range of ideas from the MMTP training day.

B) Using the Story Bag to Promote Story Ideas

Nursery workers can create a unique story each time they use the story bag.

Alternatively, they can work with a group or class of children to create a story together. Children can make up stories as individuals or work as groups. Nursery workers could scribe such collective stories for the children. It would be good to do this by hand or record a snapshot.

Nursery workers can put children into stories. They might pick a child who could do with feeling special that day and use their name. Fox Eades (2006) suggested that this is a positive way to build good relationships with children. Moreover, this kind of activity helps to reassure children and build their trust.

Nursery workers can create unfinished tales, which is a great technique for helping children to take the first step towards creating their own, unique story. They can also ask children to complete the story before it is told. It is a very effective way of involving children in the art of creating stories, and they love hearing their ideas used.

**Nursery workers' skill at composing unique stories can also be used with children in order to help them make up unique stories for themselves. The processes of composing a story and writing a story are different. Writing can seriously inhibit children's imagination or willingness to be creative (Fox Eades 2006).**

Nursery workers can use the environment to tell stories, or link stories to seasons and festivals. With regard to spiritual development, they can link stories to religious education or care. Another way of approaching the cross-curricula aspect of stories is to start with the story itself and observe how it might enrich different areas of the curriculum such as science, history or art (Fox Eades 2006; Tarr 2008).

C) Why Story Bags are Useful for Promoting Child Development

The story bag in this training package demonstrated how nursery workers play with children in a small group; it also reflected how they felt about encouraging children in all aspects of development. Every activity was based on the three themes from the content analysis results.

The aim of introducing the story bag technique was to give Thai nursery workers the confidence to enjoy playing together with children. Not all nursery workers find it easy

to make up new stories, but with the supporting materials contained in a story bag, they can successfully play with children at a variety of levels of development and provide for different age groups such as toddlers and preschoolers.

A story bag can enhance all aspects of child development (SPECIAL development). After children have explored all the items in the bag (or sack), they are better prepared to brainstorm and discuss the stories related to the items with nursery workers and other children within the group.

In childcare centres, this **activity depends on the children's interests rather than a set curriculum**. The activity encourages children to work in groups, and the materials they work with are diverse and unrelated, such as paper, candles, glue, wood, metal, shells and recycled items.

This researcher designed the story bag in the MMTP as a game with the aim of allowing nursery workers to reflect on, share and develop their experience of using a story bag to make a short story. Following the activity, they brainstormed and presented their story in groups. This researcher gave the nursery workers alternative ideas and practical experience for using a story bag, and enabled them to create their own story bag to use with children in their workplace. Moreover, the workshop reflected **nursery workers' feelings about how children learn and develop through playing with a story bag**. The reasons for this activity stemmed from the integration of the three themes from the content analysis results. The learning aims were as follows:

1. To focus on the importance of a story bag.
2. To identify the benefits of offering a story bag.
3. To know how children learn and develop through playing with a story bag.
4. To allow childcare workers to reflect on sharing and developing their experience of using a story bag.
5. To give nursery workers new ideas and practical experience for using a story bag.
6. To enable nursery workers to create their own story bag to use with children in their workplace.

At the end of the training day, the nursery workers received a story bag for creating play activities with children at their childcare centres.

### 3.5.1.4 The Implementation of the MMTP

Training is the process of increasing knowledge, learning and experience. Training does not use one specific method but instead several in order to maximise efficiency. The determination of the training method depended on the three components identified above.

## A) Adult Learning Principles Influencing the MMTP

In order to gain optimal learning outcomes, Knowles' (2006) adult learning principles were applied during the implementation of the MMTP, which consisted of three phases (to be described later). These principles are reflected in activities listed in Table 3.15.

Principles of Adult Learning	Learning Phases	Activities
Needs and interest	Introductory phase	Asking questions about what the nursery workers expected from the training as well as their understanding <b>about children's play</b> Pre-testing about attitude and knowledge
Life situations	Introductory phase	Asking about everyday childcare situations, particularly play and play environments
	Transmission phase	Giving examples that are realistic and relevant to local resource contexts
Experience	Introductory phase	Asking questions to gauge <b>participants' experiences and</b> practices relating to childcare and organising play
	Transmission phase	Asking nursery workers to brainstorm in order to share experiences, tips and good practices as well as exchange knowledge gained based on assigned tasks
Self-directing	Transmission phase	Allowing nursery workers to participate in activities such as leading games and role play
	Review and summarisation phase	Allowing nursery workers to discuss and share ideas on how to apply SPECIAL development through play
Individual difference	All phases	Showing concern for individual differences Responding to the needs and questions of individual nursery workers, which may be different to others

Table 3.15: Plan for Participatory Learning in MMTP Training

## B) Training Technique

The next stage was for this researcher to review the related literature and gather more ideas for orientation with the play environment by undergoing observational visits. One **week was spent with play specialists in children's wards, and another week with** nursery workers in Taplins Day Nursery at Southampton General Hospital. This allowed the researcher to witness first-hand the role of play and its link to child development.

The success of the training would chiefly depend on training techniques that would help participants learn and fulfil the training objectives. These techniques were developed from direct experience; this researcher underwent training with the Southampton Early Years Development and Childcare Partnership, organised by **Southampton City Council's Early Years and Childcare Workforce Development Team**, to obtain relevant knowledge about the play training programme for five courses that took place from 2009-2010. These courses were 'Creating a multisensory environment' (a six-hour course), 'Process not Product' (a five-hour course), 'What is this play thing?' (a 7.5-hour course), 'Attachment' (a five-hour course) and 'Importance of play' (a 12-hour course). Moreover, this researcher learnt more about how these training techniques were used; the data were used to support the design of a training package relating to play.

The Early Years and Childcare Workforce Development team run a Continuous Professional Development (CPD) training course programme for nursery workers every year. This training opportunity is offered to all practitioners working within the early-years sector in every city in England. The majority of practitioners use this training to develop their knowledge, understanding and practice. The course is aimed at building **nursery workers' skills, abilities and knowledge** in order to help them provide a safe, stimulating and welcoming environment for the children in their care. This researcher applied this valuable experience from observational visits and training in the UK to the creation of the MMTP training techniques.

The training package in this study combined many training techniques and multimedia. Educational technologies were used, and the participation of the nursery workers was encouraged, in order to enhance their knowledge and attitudes as well as help them to apply the techniques to daily work.

### C) Media, Learning Material and Equipment

This researcher demonstrated how to make the play environment safe, and also how to make effective teaching equipment from such common items as shells, bottles, old newspapers, plastic scraps and discarded wooden items, through various workshops and group discussions with handouts. The participants were then encouraged to brainstorm in order to create a three-minute story and present the role play to others. The nursery workers were concerned about the costs of equipment, and so the researcher encouraged them to use learning media and teaching equipment that was less expensive and available in their local areas:

- Recycled materials and materials within the centres, such as empty water bottles, candles, newspapers and flyers.
- Natural materials such as clay, sand, water, leaves and sticks.

- Toy models such as food models, kitchen equipment models, vehicle models and dolls.
- Real equipment that was clean and safe such as clothes, shoes, hats, accessories and household items.

D) The Researcher as a Trainer

This researcher has been a paediatric nurse teacher at the Department of Paediatric Nursing, Boromarajonani College of Nursing, Nakorn Lampang in Thailand since 1997, and gained a Diploma in Nursing Science (equivalent to Bachelor of Science in Nursing) and a Masters in Nursing Science (Nursing Science) in 2003.

Her responsibility is to train undergraduate nursing students in Paediatric Nursing and also supervise them in matters such as practicum in hospital and community provision of effective nursing care. During the period of these significant experiences, the emphasis is on the four main dimensions of nursing: caring, health promotion, prevention and rehabilitation. As such, she is well-placed to train nursery workers in the importance of play and the play environment.

E) Description of the MMTP Training

**Due to the nursery workers' time constraints, the MMTP training was carried out on a Saturday.** Therefore, the one-day training had to fit into six to eight hours.

The MMTP training involved a full day (six hours) of continuous training at Boromarajonani College of Nursing, in order to save the participants both travel time and cost.

The MMTP training process emphasised knowledge and attitudes pertinent to the play environment by providing the opportunity for nursery workers to participate in training activities.

The MMTP training was organised into three learning phases as follows:

1. Introductory phase (introduction of the researcher and the training content).

This phase gave participants a clear understanding of the expectations, objectives and background of the training and emphasised the importance of the problem, the aims of the training and other points about cohabitation. Activities promoted making **acquaintances and icebreaking.** This also helped to gauge the participants' experiences, thoughts, beliefs and additional needs (Knowles et al. 1998).

2. Transmission of content and creation of learning procedure phase.

In order to improve and enhance knowledge, understanding and attitudes about the play environment, different training techniques were used, such as a PowerPoint lecture, brainstorming and discussion in small groups using a handout (see Appendix 3.6).

Participants also watched a video of a television programme, 'Po Pla Ta Glom', in sessions 2 and 3 (see Table 3.16). It was broadcast by the Thai Public Broadcasting Service (TPBS) on TV Thai Channel, and produced by Associate Professor Sairudee Vorakitphokatorn, Ph.D. (the Director of National Institute for Child and Family Development, Mahidol University, Thailand), from whom the researcher gained permission to use the programme in this study (see Appendix 3.8). The length of the video is approximately five minutes; it is a valuable resource for illustrating how children play with dough. Through the programme, the nursery workers easily understood the importance of play, child development and the play environment. The programme emphasises the importance of combining different aspects of child development in a well-balanced and concrete manner. Nursery workers were encouraged to increase the children's potential in different areas, such as cognitive skills, psychological behaviour, emotional health, social skills, problem-solving abilities and creative skills through play.

### 3. Review and summarisation phase.

This phase gave individual nursery workers an opportunity to review their knowledge via various methods, such as a test, linking knowledge to other topics, discussion, group opinion presentations and content summarisation. These procedures were arranged according to the specified training framework (Knowles et al. 1998).

Nursery workers were encouraged to share ideas and thoughts during the training activities in order to gain the most from the learning process. The training sessions were dynamic, interactive workshops, designed to promote knowledge and attitudes about the play environment in order that the participants would implement their new skills successfully. **Individuals' concerns and questions were answered by the trainer.** The nursery workers were given educational materials (MMTP) for further self-directed learning outside the workshop (Knowles et al. 1998).

### F) Course Suitability

Table 3.17 illustrates the composition of the MMTP training, which comprised 10 sessions, 14 activities and seven workshops, alongside the training techniques.

Session	Duration (Minutes)	Activities	Objectives and Training Techniques
1	15	1. Icebreaking activity	1. To bridge the gap between trainers and trainees and among trainees 2. To create a good atmosphere in which the trainees could learn - Game (group dynamic activity)
2	30	2. The importance of the play environment	To understand the importance of the play environment - PowerPoint presentation, handout, DVD, small group discussion followed by open class discussion
3	45	3. SPECIAL developments and adult roles	To understand SPECIAL developments and adult roles - PowerPoint presentation, handout, DVD, small group discussion followed by open class discussion
4	65	4. <u>Workshop 1</u> : Using role play in small worlds construction and home corners 5. <u>Workshop 2</u> : Book corners 6. <u>Workshop 3</u> : Outdoor play and music	1. To learn how to apply SPECIAL using seven different workshops in order to give childcare workers new ideas and practical experience to use in their work 2. To enable childcare workers to provide appropriate activities for supporting development through play by using a range of materials and understanding the nature of adult encouragement - Materials and toys, workshop in groups
5	30	7. Show and tell	To present final products from Workshops 1 and 2
6	65	8. <u>Workshop 4</u> : Play dough 9. <u>Workshop 5</u> : Painting, drawing, gluing and collage 10. <u>Workshop 6</u> : Play with natural materials - water, wood, clay, sand and alternatives	1. To learn how to apply SPECIAL using seven different workshops in order to give childcare workers new ideas and practical experience to use in their work 2. To enable childcare workers to provide appropriate activities for supporting development through play by using a range of materials and understanding the nature of adult encouragement - Materials and toys, workshop in groups
7	30	11. Show and tell	To present final products from Workshops 1 and 2
8	15	12. Energising activity	To entertain and motivate trainees in preparation for the next topic - Game (group dynamic activity)
9	30	13. <u>Workshop 7</u> : A story bag	1. To learn how to apply SPECIAL using seven different workshops in order to give childcare workers new ideas and practical experience to use in their work 2. To enable childcare workers to provide appropriate activities for supporting development through play by using a range of materials and understanding the nature of adult encouragement - Materials and toys, workshop in groups
10	15	14. Summary	To summarise the importance of the play environment to the promotion of child development

Table 3.16: Activities Plan on MMTP

(NB: A full copy of the MMTP can be found in Appendix 3.6)

### 3.5.1.5 Evaluation of the MMTP

The first draft of the MMTP was reviewed by five experts to ensure content validity using the Index of Congruence (IOC):

$$\text{IOC} = \Sigma^R/N$$

Where IOC means index of item-objective congruence,

$\Sigma^R$  means specialists' opinion score sum.

N means number of specialists.

An IOC of 0.5-1.0 for the MMTP draft would be suitable.

An IOC below 0.5 should be improved (Turner & Carlson 2003).

These experts were:

1. A paediatrician and lecturer who specialises in child health
2. A university lecturer working in human resources for the health development in E-learning programme
3. A university lecturer working in teaching at Dental Public Health, Data Analysis for Public Health, Media Health and Health Information Technology
4. A university lecturer with experience of supervising paediatric nursing studies
5. A nursing instructor who lectures in child development and is the head of the childcare centre at a nursing college.

**The MMTP was revised according to the experts' comments and suggestions. The full details of the MMTP are illustrated in Appendix 3.6. The IOC result indicated that the MMTP was highly congruent in every session (IOC=0.8-1.0). It showed that the MMTP could be used for training. Table 3.18, below, shows an evaluation value for curriculum suitability by specialists.**

Evaluation items	Suitability level			$\Sigma^R$	IOC
	Suitable	Unsure	Unsuitable		
1. Duration is suitable for the curriculum.	5	-	-	5	1.0
2. Content of each subject can be suitably used in its relevant situation.	5	-	-	5	1.0
3. Arrangement of each learning unit is sequential and convenient for learning.	5	-	-	5	1.0
4. Training method of each learning unit is suitable for objectives and subject content.	4	1	-	4	0.8
5. Curriculum content can bring about working skills on knowledge of and attitudes towards the play environment.	4	1	-	4	0.8
6. Training methods are learner-centred.	4	1	-	4	0.8
7. Media and equipment are suitable for each learning unit.	5	-	-	5	1.0
8. Evaluation allows the training participants to participate at both a group level and individual level.	5	-	-	5	1.0

Table 3.17: Evaluation Value for Curriculum Suitability by Specialists

The purpose of the next phase would be to evaluate the effectiveness of the MMTP by **examining Thai nursery workers' knowledge of and attitudes towards** the play environment. A comparison would be made between the knowledge and attitudes of nursery workers in the three sample groups: one group would receive the MMTP training, one would receive the official training and one would receive no training. When the MMTP was formulated, it was decided to carry out questionnaires and then explore its effectiveness further via semi-structured interviews.

### 3.5.2 Designing of the Multiple Choice Questions

Designing multiple choice questions (MCQs) is a complex and time-consuming process when working with a multi-disciplinary integrated curriculum (Mitra et al. 2009).

Multiple choice questions (MCQs) are commonly used to test acquisition of knowledge and basic understanding across a broad curriculum (Considine et al. 2005; Quinn & Hughes 2007). They can also be used to test higher order thinking skills (Peitzman et al. 1990) such as application and analysis. MCQs can be used for a quick assessment in even the largest class sizes, measure a variety of levels of learning, are easy to score, can be analysed in order to yield a variety of statistics and (when well-constructed) have proven to be an effective assessment tool.

Due to its practical and straightforward steps, Bloom Taxonomy was chosen as a framework for evaluating **participants' knowledge in this study**. Bloom et al. (1979) defined knowledge as the recall of specifics and universals, methods and process or

pattern, structure and setting. It is related to the psychological process of connection and restructuring.

This researcher chose the MCQ method because it assesses the higher order cognitive **processing of Bloom's taxonomy and is easy to administer in large volumes.** The method achieves more accurate results because it can be used in the test evaluation process or analysed to produce a variety of statistics.

The conventional format of MCQs has three components: 1) a stem – the text of the question; 2) the key – the correct answer in the list of options; 3) distractors – the incorrect answers in the list of options (McKenna & Bull 1999; Considine et al. 2005).

**In this study, 'knowledge' meant the ability to express intelligence via memory, understanding, using, analysing, synthesising, and evaluating within play and the play environment multiple choice questionnaires.**

### 3.5.2.1 Construction and Selection of MCQ Items

This researcher aimed to evaluate the MMTP by testing the knowledge levels of nursery workers. Therefore, MCQ items were designed with reference to the example test paper available on the Council for Awards in Care, Health and Education (CACHE) website. These MCQs were sourced from CACHE (2010), and are relevant to the three themes from the content analysis results: the importance of play, play and child **development and adult roles. The nursery workers' scores were derived from** knowledge-based multiple choice questions (MCQs).

The reason for choosing the MCQ practice test from CACHE is that the majority of the content analysis was based on CACHE, and therefore it informed the content of the MMTP. Their test was suitable for measuring the level of knowledge that nursery workers gleaned from the MMTP. Furthermore, as CACHE is the awarding body for **nursery workers, their test is the accepted standard for testing these professionals' knowledge.**

This researcher received help from Dr Bill Warburton, an expert on MCQ design from iSolutions at the University of Southampton, who informed the discrimination of the MCQ items when the pre- and post-test instrument was developed using this methodology. A Likert scale was also used to measure attitudes pertinent to play and the play environment.

The results of performance in MCQ tests are used to determine the difficulty index and discrimination index of each MCQ item in the tests (Backhoff et al. 2000; Sim & Rasiah 2006). Quinn and Hughes (2007) suggested that validation should be performed after

the test has been marked and that two aspects should be considered: facility index, or difficulty index (Backhoff et al. 2000), and discrimination.

Table 3.19 shows this researcher's design test blueprint, based on the content analysis results. (The MCQs can be seen in Appendix 3.7.)

Content Outline	Objective-test							Percentages
	Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation	Total	
The importance of play	2	2	-	-	-	-	4	16
Promoting all aspects of child development	3	4	-	-	-	-	7	28
Adult roles	2	4	2	2	2	2	14	56
Total	7	10	2	2	2	2	25	100

Table 3.18: Test Blueprint by Objective-test

#### A) Difficulty Index

The term 'difficulty index' (P) refers to the percentage of correct responses to a test item. It is calculated by the formula  $P = R/T$  (Backhoff et al. 2000), where R is the number of correct responses and T is the total number of responses (i.e. correct + incorrect + blank responses). Hence, the higher this index value, the lower the difficulty, and the greater the difficulty of an item, the lower its index.

Meanwhile, Quinn and Hughes (2007) defined the term 'facility index' to refer to the percentage of students answering the item correctly. The facility index is calculated by the following formula:

$$\text{Facility index} = \frac{\text{Number of students who answered correctly}}{\text{Total number of students tested}} \times 100$$

It ranges from 0-100%. The acceptable range of facility is from about 25-75% (Linn et al. 2005; Quinn & Hughes 2007). Items with p-values below 25% and above 70% are considered difficult and easy items respectively (Linn et al. 2005).

#### B) Discrimination Index

The discrimination index (Di) measures the difference between the percentage of students in the upper group ( $P_u$ ) (i.e. the top 27% of scorers who obtained the correct response) and the percentage of those in the lower group ( $P_l$ ) (i.e. the bottom 27% of

scorers who obtained the correct response); thus,  $D = P_u - P_L$ . The higher the discrimination index, the better the item can determine the difference i.e. discriminate between students with high test scores and those with low ones (Backhoff et al. 2000; Sim & Rasiah 2006).

The discrimination index (Di) for this study was calculated as follows:

$$Di = 2 \times [(H-L) / N]$$

Where  $Di$  = Discrimination index for item i

$H$  = the number of correct answers to item i among the 27% of those with the highest test scores

$L$  = the number of correct answers to item i among the 27% of those with the lowest test scores

$N$  = the total number of nursery workers in both high and low groups

The discrimination index was calculated by arranging the completed test papers in order from the highest to lowest mark, and then placing them into high and low groups. The top 27% of the high group and the bottom 27% of the low group were used to calculate the index.

The index could range between -1.00 and +1.00; zero would indicate no discrimination. It was expected that the high-performing students would select the correct answer for each item more often than the low-performing nursery workers. Positive discrimination would be accepted at 0.3 and above (Quinn & Hughes 2007; Hingorjo & Jaleel 2012).

A positive Di (between 0.00 and +1.00) would indicate that nursery workers who received a high total score chose the correct answer for a specific item more often than nursery workers who had a low overall score.

A negative Di (between -1.00 and 0.00) would indicate that the low-performing nursery workers chose the correct answer for a specific item more often than the high scorers.

In quantitative research, validity is a quality criterion that indicates the degree of accuracy of study conclusions (Polit & Beck 2010). The next section describes how the content validity of this instrument was assessed.

### 3.5.2.2 Validity

Validity is closely related to reliability; for an instrument to be valid, it must be reliable (Considine et al. 2005). The validity of a research instrument is the degree to which the instrument measures what it is supposed to measure. It is important to remember that instruments may be reliable even when they are not valid (Polit & Beck 2008; LoBiondo-Wood & Haber 2010).

Factors that contribute to increased or decreased difficulty of MCQs include poor instructions, use of complicated vocabulary, ambiguous statements, inadequate time limits, some form of bias (Considine et al. 2005; Linn et al. 2005), MCQs that are inappropriate for the learning outcomes being measured, poorly constructed MCQs, too few MCQs and identifiable patterns of correct answers (Linn et al. 2005). The validity of each of these elements needs to be determined in order to establish the overall validity of MCQs (Considine et al. 2005).

The content validity of MCQs is usually established by a content review, which should be undertaken by experts in the domain under examination who also have some expertise in tool development. It is recommended that expert panels comprise at least three persons (Considine et al. 2005; Polit & Beck 2008). The construct validity of MCQs should be established using item response analyses such as item difficulty analysis and item discrimination analysis (Case & Swanson 2002; Considine et al. 2005; Linn et al. 2005; Quinn & Hughes 2007).

### 3.5.3 Designing of the Attitudes Likert Scale

Allport (1935 cited in Pickens 2011) originated the well-known definition of attitudes; it was proposed that attitudes are mental or emotional states of readiness, organised **through experience, exerting a directive or dynamic influence on an individual's response to all objects and situations with which it is associated**. Myers (2007) stated that attitudes are associated with a belief or feeling **which influences an individual's behaviour**. A simpler definition of attitudes is an individual's mindset or tendency to act in a particular way due to both their experience and temperament (Pickens 2011).

#### 3.5.3.1 Components of Attitudes

There are three components of an attitudes (Hiriyappa 2009; Champoux 2010):

1. The cognitive component refers to an opinion or belief that an individual holds, based on available information, about a person, object or situation. It could be either bad or good, positive or negative.

2. The affective component refers to the emotion or feeling, either desirable or undesirable, that the individual associates with the object of the attitudes.
3. The behavioural component is a readiness to respond towards something in some way.

These three components work alongside each other. It could be summarised that they are related to each other, with the cognitive and affective components being the baseline for the behavioural component. For example, when a person receives information about something and considers it good (cognitive component), he or she feels positively about this thing (affective component); consequently, he or she responds to this thing according to his or her feeling (behavioural component).

Therefore, the change of any component will affect the other components. However, attitudes change depends on several factors such as learning, imitation, direct experience, information sources, social influence, family and peer pressure (Rogers 2003; Benjamin 2007).

### 3.5.3.2 Attitudes Evaluation

The attitudes scale is an instrument for attitudes assessment. There are several types of scales that have been developed to measure attitudes (Hilary 2003), as follows:

1. Thurstone Scale: requires the respondent to choose between two possible answers to a statement, usually by ticking a true/false or agree/disagree box.
2. Likert Scale: is simple, easy to use (Neuman 2006) and more reliable than other tests (Tittle & Hill 1967).
3. Guttman Scale: requires the reader to select the item that best applies. The list contains items that are cumulative, so the scale does not give enough variation of feelings and perceptions.
4. **Osgood's Scale:** requires the reader to make a mark on a scale between two opposing opinions in order to record how they feel about the object, for example good-bad, pleasant-unpleasant and kind-cruel.

Each attitudes scale possesses both advantages and disadvantages; each is most suitable to a particular form of assessing attitudes. Therefore, selecting an attitudes scale is based on the situation and the restrictions of the research. The Likert scale was selected to **measure nursery workers' attitudes towards the play environment because** it is the most widely-used method of scaling in the social sciences and is much easier to construct than the others. It is also more reliable than other scales with the same number of items (Tittle & Hill 1967).

Likert rating scales, originally developed by Rensis Likert (1932), are used in various settings, including clinical, educational, administrative and organisational contexts. Reasons for their popularity include: 1) relative ease of construction, 2) yielding of reliable scores, and 3) simplicity of understanding for participants (Bertram 2007). This type of rating scale is the most widely-used attitudes scaling technique in the social sciences.

### 3.5.3.3 Likert Scale of Attitudes Towards the Play Environment

The Likert scale involves specifying the level of agreement or disagreement on a symmetric agree-disagree scale for a series of statements. Thus, the range captures **the intensity of the participants' feelings for given items.**

The Likert scale was selected to measure the nursery workers' attitudes towards the play environment because the method is relatively easy to construct, produces reliable scores and is simple to read and complete for participants. Additionally, it had already been successfully applied to measure the attitudes of English teachers in Gomleksiz's study and preschool teachers in Kabadayi's study.

The attitudes questionnaires in this study was adapted by this researcher from **Kabadayi's study** (2006), which focused on the attitudes of preschool teachers towards the use of educational technology in the service. **Kabadayi's study** (2006) employed an 'attitudes scale' consisting of 36 items (24 positive and 12 negative items); a five-point Likert-type scale was also developed by Gömleksiz (2004), who used it to collect **teachers' views towards the use of educational technology in preschool settings** and thus assess their needs. It was rearranged and adapted to the teaching domains of preschool teachers.

The Likert scale usually contains odd numbers of response options such as 5, 7, or 9. This means that the scale has a middle neutral point. A mid-point allows respondents to select a neutral option, which may be important if the respondent is truly ambivalent towards a topic. For some social research, researchers intentionally adopt the four-point scale for 'socially desirable items'. The reason for this is that it semi-forces the respondents to choose a side to some degree. Accordingly, a four-point Likert scale was chosen for this study, and attitudes towards the play environment were measured through responses to 36 statements. (For the full knowledge MCQs, see Appendix 3.7).

**The scale's four response categories were: Strongly Agree, Agree, Disagree, and Strongly Disagree.** The scale points for positive questions were 4, 3, 2, 1, and the scale points for negative questions were 1, 2, 3, 4. Negative items were reversed in order to maintain a homogenous score.

### 3.5.4 Designing of the Semi-Structured Interview Questions

In the semi-structured interview method, the basic research question may serve as the first interview question, but between five and 10 more specific questions are usually also developed in order to delve more deeply into different aspects of the research issue (Bryman 2012).

The semi-structured interview guide was reviewed and assessed by the two supervisors of this Ph.D. project; one is an expert in the paediatric area (the main supervisor) and one is a senior statistician (the second supervisor). They both judged it to be a valid instrument. The questions were adjusted and corrected before completing the data-gathering.

The semi-structured interview questions relating to the MMTP training course implementation were developed by the researcher. The six questions were open-ended trigger questions (shown in Table 3.20). The interview guide was used to direct the flow of the conversations. It provided flexibility in data collection and encouraged the **emergence of the participants' realities**.

The questions were designed to obtain information from nursery workers about the utility of the MMTP intervention, barriers to implementation and elements of the intervention. Participants were also asked to comment about the effects of the MMTP or parts of it (which they had implemented with the children) on the children (Question 5). These effects referred to changes related to the SPECIAL dimensions in children observed by the nursery workers following the implementation of the MMTP. The changes were, however, not measured quantitatively as they were not the objectives of this study. There were follow-up questions relating to the respondents' earlier replies, based on what was relevant to the study. Question 3 and Question 4, for example, **relate to the way that nursery workers' reflections on the play environment are expressed in their teaching and caring**.

To attain fuller answers in the semi-structured interviews, this researcher utilised topics relating to rigour: attentiveness, empathy, carefulness, sensitivity, respect, honesty, reflection, conscientiousness, engagement, awareness and openness (Davies & Dodd 2002).

Question 1: What did you learn from the training?	
Question 2: What were the most useful things you learned?	
Question3: Have you used workshop 1-7? Workshop 1: Role play in small worlds construction Workshop 2: Book corners Workshop 3: Outdoor play and music Workshop 4: Play dough Workshop 5: Painting, gluing, collage and drawing Workshop 6: Play with natural materials Workshop 7: A story bag	
Answer: If YES (ask question below) What did you do? How did you organise it? How did it go? What did the children do? What do you think the children learned?	Answer: If NO (ask question below) <b>Why have you not used...?</b> <b>Do you agree that...is important?</b> Why important? Or why not important? <b>What did you learn about...in the training day?</b> <b>How can you use...in your childcare centre?</b>
Question 4: Has the training changed the way you work?	
Question 5: How has the training affected the children?	
Question 6: Did you have any problems using what you learned on the training day?	
Answer: If YES (use question below) What was the problem? Why did you have a problem? How did you solve the problem?	Answer: If NO (use question below) Why do you think you did not have any problems?

Table 3.19: Semi-Structured Interview Guide

### 3.5.5 Ensuring Quality Testing of Translation and Back-Translation **of** the MMTP, Knowledge MCQs, Attitudes Likert Scale and Semi-Structured Interviews

Instrument content validity, particularly with respect to consistency of language meaning, was a concern when translating the instruments from English to Thai (Tuckman 1999). Content validity addresses the issue of concept representation by the instrument, while other elements of the questionnaires focus on the level of the **instrument's comprehensiveness** (Polit 2010).

In order to minimise the technical terms in the questionnaires (such as 'socio-communicative style') which could cause misunderstandings for participants, the researcher adjusted the instructions and **wording to fit with the respondents'** organisational context so as to provide a better explanation in their own language. In addition, the context of each scale instruction was adapted to fit the organisational situation reflected in the supervisor-subordinate relationships.

This researcher needed to consider equivalence of meaning, as it is the most important aspect of translation. Chen and Boore (2010) recommended back-translation as the best procedure for achieving this. Brislin (1970) defined back-translation as translating from the target language (for this study, Thai) back to the source language (English) and then evaluating the equivalence between source and target versions (Chapman & Carter 1979; Guillemin et al. 1993).

This researcher therefore employed the translation and back-translation method; all instruments – the MMTP, knowledge MCQs, attitudes Likert scale and semi-structured interviews – were initially translated from English into Thai by this researcher and then back-translated into English by the three Thai Ph.D. students to check the equivalence of meaning.

Content validity is also based on expert opinion. Three Thai Ph.D. students were invited to verify the content validity of all instruments. At the time, they were all Ph.D. students at the University of Southampton, in different disciplines: one was a qualified paediatrician and lecturer, another was a physical therapy lecturer in the Faculty of Health Sciences and the last was a linguistics teacher in the Faculty of Humanities.

The three versions were checked for adequacy in translation. The discrepancies between the three versions suggested to the researcher that further translation was required. Revisions were thus made, following comments and recommendations from the three experts. This researcher then conducted two successive translations and back-translations in order to obtain better approximations of the original version and derive a satisfactory final version of the translated material. The final agreement was reached when no discrepancies between the two versions were detected by either the three experts or the researcher.

### 3.5.6 Pilot Study

A pilot instrument study was conducted to test the reliability of the questionnaires prior to launching the data-collection administration. This pilot study helped to sharpen the clarity of the information for its intended participants.

The aim of the pilot study was to determine the clarity of the Thai version of the instrument, appropriateness of content, readability, instructions and format. Moreover, this researcher wanted to investigate the applicability and ambiguity of the concepts referred to in various items, as well as gather additional comments from the respondents which could be valuable in improving the questionnaires.

### 3.5.6.1 Pilot MMTP

The MMTP training was first tried out with four Thai nursery workers in the Centre of Preschool Child Development, Boromrajonani College of Nursing, Nakorn Lampang; this particular training was not included as a research sample for the study. The setting had similar characteristics to the childcare centre selected as the location for the main study. The Director of Boromarajonani College of Nursing also granted permission for this researcher to use the facilities and equipment on the training day. The purpose of the MMTP training pilot study was to identify potential problems with the design, test the intervention program and try out the data collection instruments (Polit 2010).

### 3.5.6.2 Pilot Semi-Structured Interviews

This researcher tested the questions on four nursery workers with similar characteristics to the participants of this study in the Centre of Preschool Child Development, Boromarajonani College of Nursing, in order to assure the validity of the questions.

Following the selection of the four nursery workers, the researcher began by using the semi-structured interview questions to interview two nursery workers and to check their understanding of the questions. It was noticed that they could not elaborate on some topics, answering the questions only briefly; the researcher thus reviewed their questions and answers with assistance from the main supervisor. The resulting revised questions were used to interview the remaining two nursery workers, who were able to answer and express themselves in greater detail. The researcher therefore used these revised questions to interview the participants.

### 3.5.6.3 Pilot Study of Knowledge MCQs and Attitudes Likert Scale

Both data-collection research instruments (the knowledge MCQs and attitudes Likert scale) were piloted with 39 Thai nursery workers in Hang Chat district, Lampang province. These participants had similar characteristics to the sample groups. The participants were asked to complete the questionnaires as well as answer the open-ended questions, highlighting any strange terms or unclear instructions that they encountered. The 25 MCQs and 36 Likert scale statements in the questionnaires were returned to the researcher for analysis. The questionnaires were therefore thoroughly tested for content validity and reliability before use.

### 3.5.6.4 MCQ Results and Selecting Items from CACHE

A total of 40 out of 180 test items were selected by this researcher for the item analysis. Each MCQ consisted of a stem and four choices; the nursery workers selected the best answer from the four choices, which were all relevant to the importance of

play and the play environment. The content was first checked with the three Thai experts in order to verify its validity. The researcher then translated 40 test items into Thai and back-translation (see 3.5.6). The resulting content was tested on the 39 nursery workers from the Hang Chat district. The MCQs were analysed for difficulty index (p-value) and discrimination index (Di), as presented in section 3.5.2.1. Items with a p-value between 25-75 and Di of greater than 0.25 were considered to have good difficulty and discrimination indices respectively. Therefore, a total of 25 out of the 40 test items were used to test the nursery workers in the main study.

The knowledge of nursery workers towards the play environment was measured by these 25 MCQs, which each had four distractors. The criteria for scoring were 1 mark for a correct answer and no marks for an incorrect answer. Total scores could range from 0 (all incorrect) to 25 (all correct). Items varied according to the contents; higher scores indicated better knowledge. The researcher employed the criteria suggested by Bloom (1979) to determine the level of knowledge in this study. According to Bloom (1979), higher scores (80% of total score or higher) indicated good knowledge, medium scores (60%-less than 80% of total score) indicated moderate knowledge and lower scores (less than 60% of total score) indicated a low knowledge level. These criteria are widely used in performance grading and thus would ease the interpretation of the results of test evaluation. In this study, good knowledge, moderate knowledge and low knowledge are marked by ranges of scores between 20-25, 15-19, and 0-15 respectively. Item analysis was then conducted to ascertain the difficulty index, discrimination index and reliability.

### 3.5.6.5 Reliability of the Research Instrument Used in the Pilot Study

The reliability of an instrument refers to its ability to produce consistent and stable measurements (Ngah & Ibrahim 2011). The quality of the knowledge questionnaires was thus investigated in terms of the consistency of results across items on the same test; the reliability coefficient was calculated by using Cronbach's alpha, which estimates internal consistency reliability. Siegle (2002) explained that Cronbach's alpha is functionally equivalent to Kuder-Richardson formula 20 (KR-20), and in fact produces the same results as KR-20 with a dichotomous score (0 for incorrect and 1 for correct), wherein values can be 0.00 or 1.00. The higher the coefficient, the more reliable the test (Polit 2010).

The reliability of the questionnaires was tested using the Cronbach's alpha coefficient of scale in order to determine the internal consistency of each construct among all items. To be considered a useful measure, social research should have a Cronbach's alpha of at least 0.6 or 0.7, preferably closer to 0.9 (Sekaran 2003; Bryman 2012).

**The result of this test for the knowledge questionnaires was  $\alpha = 0.809$ ; for the attitudes questionnaires it was  $\alpha = 0.816$ . Both the Cronbach's alpha values were over the critical point of 0.7, indicating that the reliability of this instrument was acceptable and suitable for use in the study.**

## 3.6 Research Methods in Phase II: Part A

The overall purpose of Phase II was to evaluate the effectiveness of the multimedia teaching package (MMTP) by examining Thai nursery workers' knowledge and attitudes towards the play environment via a questionnaires (data-collection instrument) consisting of three parts:

Part I addressed the demographic aspects of Thai nursery workers.

Part II tested the knowledge of the play environment with MCQs (dependent variable).

Part III examined the attitudes towards the play environment using the Likert scale (dependent variable).

### 3.6.1 Population and Sample

#### 3.6.1.1 Population

The population in this study was made up of Thai nursery workers working in childcare centres under the administration of the Department of Local Administration (DLA), Ministry of Interior, Thailand. In 2009, the Department of Local Administration (2010) surveyed the country and found that there were 43,378 nursery workers caring for 789,760 children in 18,222 childcare centres.

#### 3.6.1.2 Sample and Location of the Sample

This study employed three different training channels: official training, multimedia teaching package (MMTP) training and no training.

The group which received the official training were nursery workers who travelled to Nonthaburi province to attend the six-day training course organised by the DLA at the Legacy Hotel in the fiscal year 2010-2011. The researcher named this group the Nonthaburi control group.

The group which received the MMTP training and the group which received no training were both made up of workers from Mueang Lampang. In 2008, a survey was carried out by the Lampang Provincial Local Administration Office (2010), which found that there were a total of 692 nursery workers in Lampang province, caring for 10,126

children in 399 childcare centres. In Mueang Lampang, the capital city of the province, there were 128 nursery workers in 53 childcare centres caring for 1,892 children. The researcher named these two groups the Lampang control group and Lampang intervention group.

### 3.6.1.3 Geography of the Target Population

Thailand covers an area of 514,000 square kilometres in the centre of the South-East Asian peninsula (UNESCO Bangkok n.d.-a). It is divided into 76 provinces, which are geographically grouped into 6 regions: North, South, Central, West, East and Northeast (Maps of World 2013; UNESCO Bangkok n.d.-a)

Thai local authorities were first established in 1897 and have undergone periodic development and changes. At present, there are four categories of local administrative authority, namely Provincial Administrative Organisations (PAOs), Municipalities, Sub-District Administrative Organisations (SAOs) and the special administrative authorities of Bangkok and Pattaya (Tantisunthorn 2012). The population of Thailand is 64,076,033 (UNESCO 2011; Department of Provincial Administration 2012).

Figure 3.6 shows that Nonthaburi province is in the northwestern outskirts of Bangkok, approximately 20 kilometres from the city, with an area of 622 square kilometres. It is the most densely-populated and second largest province after Bangkok. Lampang province is situated in Northern Thailand, with an area of 12,534 square kilometres, approximately 600 kilometres from Bangkok (Maps of World 2013).



Figure 3.6: Political Map of Thailand (Maps of World 2013)

### 3.6.2 Research Design in Phase II: Part A

This phase was a quasi-experimental research design with three groups (a pre-test/post-test design with a control group). Interventions are central to this method. The MMTP implementation and the data collection were conducted as shown in Table 3.21 below:

Group	Assignment	Pre-test	Intervention	Post-test	Follow up test
1	Random	O <sub>1</sub>	-	-	O <sub>3</sub>
2	Random	O <sub>1</sub>	X <sub>1</sub>	O <sub>2</sub>	O <sub>4</sub>
3	Random	O <sub>1</sub>	X <sub>2</sub>	O <sub>2</sub>	O <sub>4</sub>

Table 3.20: Pre-test/Post-test Design with Control Group

(Group 1 = Lampang control group, Group 2 = Lampang intervention group, Group 3 = Nonthaburi control group)

O<sub>1</sub> Pre-test scores in knowledge and attitudes in all three groups

O<sub>2</sub> Post-test scores in knowledge and attitudes, immediately after training, in both the Lampang intervention group and Nonthaburi control group

O<sub>3</sub> Post-test scores in knowledge and attitudes in the Lampang control group

O<sub>4</sub> Follow-up post-test scores in knowledge and attitudes, four weeks after training, in both the Lampang intervention group and Nonthaburi control group

X<sub>1</sub> The multimedia teaching package training

X<sub>2</sub> The official training

### 3.6.3 Quasi-Experiment

Most experimental research designs that are carried out in educational and social research will be **field experiments** or **quasi-experiments** (Plowright 2011; Edmonds & Kennedy 2013). These are experiments that cannot reach the exacting conditions of a true experiment, which is carried out in a human behaviour laboratory under carefully and consistently controlled conditions. They are carried out in the field; that is, in a naturalistic setting where the researcher has a reduced level of control (Plowright 2011).

In Phase II of this research, a quantitative method (quasi-experiment), not a traditional experimental design, was employed in order to evaluate the effectiveness of the

**multimedia teaching package (MMTP) in ascertaining Thai nursery workers' attitudes towards and knowledge of the importance of the play environment in the nursery setting.**

### 3.6.4 Sample Size Calculation Using the Nomogram

A nomogram is a statistical method for calculating the appropriate sample size to compare three independent groups of subjects (parallel group design). The sample size calculations are based on the principles of hypothesis testing. This study aimed to **compare the mean of independent groups of subjects. This researcher used a 'power of a hypothesis' test to calculate the appropriate sample size for a trial. The greater** the power of the study, the more reliable the results, but greater power requires a larger sample (Altman 1997; Whitley & Ball 2002). This study used the nomogram to calculate the appropriate sample size for all the situations reproduced from Altman (1982) with permission (Altman 1997). This method is simple to follow and to reverse in order to determine the power of a given sample size. This researcher was studying three independent groups of nursery workers with a continuous outcome measure. In this method, it is assumed that the variable has a normal distribution in the population. The standardised difference is calculated simply as the ratio of the difference of interest to the standard deviation.

In the Thai literature, studies on the knowledge of nursery workers are limited due to small sample sizes (some had only three nursery workers), thus no validated tools were available to assess knowledge and attitudes in the Thai context. Therefore, the researcher constructed multiple choice questionnaires for a pilot study. Preliminary questionnaires were distributed to nursery workers to test for reliability and validity. Next, the sample size was computed from the pilot study based on its average and standard deviation score (Whitley & Ball 2002).

Onwuegbuzie and Leech (2004) studied the sample sizes corresponding to traditional quantitative research designs: correlational, causal comparative and experimental. The result of the statistical power analyses were undertaken, representing sizes for detecting moderate effect with 0.80 statistical power at the 5% level of significance.

Figure 3.7 below can be used to calculate the necessary sample size from the standardised difference for any desired power, choosing either a 5% or 1% level of significance.

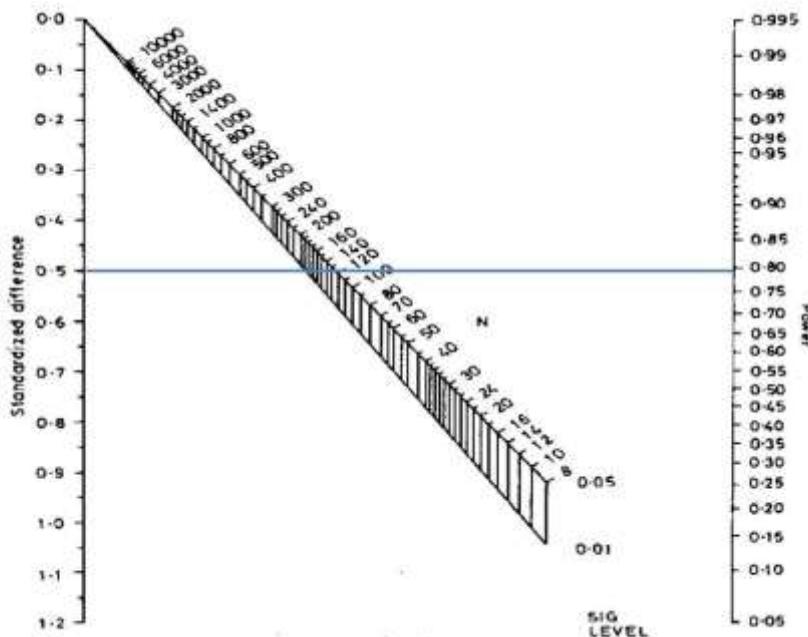


Figure 3.7: Nomogram for Calculating Sample Size for Power. Reproduced from Altman (1982), with permission (Altman 1997).

The effect of the MMTP training on knowledge and attitudes would be considered significant if there was an increase of 20% or more. For this study, a high probability of knowledge and attitudes improvement would be preferable. As such, the power was set at 0.8 (80%) with a 5% level of significance. The standardised difference was 0.5. Therefore, using Figure 3.7 to calculate the necessary sample size, a line was drawn from value 0.5 on the scale for standardised difference to value 0.8 on the scale for power, and read off the value for N (the total sample size is N) on the line corresponding to the significant level  $\alpha = .05$ ; this gave a total sample size of 120, i.e. 60 for each group.

### 3.6.4.1 Sample Size Calculation by Proportion

This is based on a change in percentage of positive responses to each question about knowledge of or attitudes towards the play environment. Units are numbers of workers. All are based on 80% power, 5% significance and calculated using the web-based calculator at Java Applets for Power and Sample Size (Lenth 2006-9).

The research design involved comparisons between two groups: an intervention group, who received the teaching input, and a control group. It was expected that in the intervention group, there would be an increase in the percentage of participants responding correctly to each MCQ.

Assuming that both the intervention and control group would give correct responses at the rate of 30% before the intervention, and that 50% of the intervention group would give a correct response after the intervention, the sample size required was 103 people per group, or a total of 206 people. If there was a larger change in the intervention group after teaching (from 30% to 60%, a doubling) the sample size required would be halved to  $49+49=98$  (see Table 3.22).

Scenario	Assumed Change		Size Requirement		Total number of people
	Percentage of the intervention and control groups giving correct responses	Percentage of the intervention group giving correct responses	Control group	Intervention group	
1	30	50	103	103	206
2	30	53	80	80	160
3	30	60	49	49	98

Table 3.21: Sample Size Calculation by Proportion

Training a minimum of 49 workers with 49 controls was therefore recommended. In the event that knowledge levels were higher than expected, a group size of 60-70, total 120-140, would be considered.

In summary, where the standardised difference is 0.5, there is no difference in sample size calculation by nomogram and by proportion. Thus, this researcher set a sample of 60 for each of the three groups: the Lampang intervention group, the Lampang control group (no intervention) and the Nonthaburi control group (official training). To ensure that the response rate of the second post-test in Nonthaburi control group equalled that of the calculated required sample size (approximately 60), 100 samples were required, as the mean response rate of post-surveys is approximately 60% (Asch et al. 1997).

### 3.6.4.2 Inclusion and Exclusion Criteria

Nursery workers for the sample were selected if they fulfilled the general inclusion criteria and not selected if they fulfilled the exclusion criteria below:

General inclusion criteria:

1. Working in state childcare centres under the control of the Sub-District Administrative Organisation of the DLA, as they represent the majority of childcare centres in Thailand.
2. Willing to participate in the study.
3. Able to read and write Thai.

General exclusion criteria:

1. Working in private childcare centres.
2. Having participated in the study but missed the second post-test.
3. Having decided to drop out of the study for any reason.

If the nursery workers fulfilled the general inclusion criteria, the specific inclusion criteria below were then followed to place the nursery workers in the correct group.

For the Lampang intervention group:

Inclusion criteria

- Working in childcare centres in Mueang Lampang.
- Not having undergone the official training by the DLA in Nonthaburi province, or any other training, within the previous six months.

For the Lampang control group:

Inclusion criteria

- Not on the list of the Lampang intervention group working in childcare centres in Mueang Lampang.
- Having undergone the official training by the DLA in Nonthaburi province, or any other training, within the previous six months.

For the Nonthaburi control group:

Inclusion criteria

- Not from Mueang Lampang.

### 3.6.4.3 Random Sampling of Intervention Group and Two Control Groups

Eliminating the systemic variation between interventional (experimental) conditions is achieved via manipulation of the independent variable using randomisation (Field et al. 2012).

A list of random numbers was created using the Random Number Generator available online ([www.random.org/integer-sets](http://www.random.org/integer-sets)). Computer programmes produce ‘pseudo-random’ numbers based on algorithms, therefore resulting in some level of predictability; random.org instead produces ‘true’ random numbers, as atmospheric noise is used. As such, the site provides reliable and unpredictable random numbers (Haahr 1998).

#### A) The Lampang Intervention Group

The intervention was conducted in Meaung Lampang, Thailand, which has 54 childcare centres with a total of 128 nursery workers. The number of workers in each centre ranges from one to eight, with an average of two per centre.

In order to assess the effect of the intervention, the research plan was to allocate workers to intervention or control groups by centre, with all the workers in a single centre being allocated as either intervention or control groups. An allocation of half the workers to the intervention group was achieved by selecting **27** centres at random from the total of **54** centres. All workers at non-selected centres were allocated to controls.

Once the list was generated, the first childcare centre was contacted in order to determine whether that centre fulfilled the intervention group criteria (see 3.3). If the childcare centre fulfilled the criteria, the availability of the nursery workers to attend training on Saturdays was determined. Nursery workers were divided into four separate training sessions with 15 in each group.

B) The Lampang Control Group

All nursery workers from the Mueang Lampang childcare centres not selected for intervention were recruited to the Mueang Lampang control groups.

C) The Nonthaburi Control Group

All the six-day official training workshops were held at the Legacy Hotel in Nonthaburi province. Each workshop had approximately 300-350 nursery workers and there were 15 training workshops between 15<sup>th</sup> November 2010 and 6<sup>th</sup> August 2011. The researcher made a random selection of one workshop during March to June 2011 and contacted a training organiser to distribute the pre-test and first post-test to 100 nursery workers, selected at random from among the participants as described in section 3.6.3.6.

### 3.6.5 Data Collection in Phase II: Part A

The purpose of Phase II was to evaluate the effectiveness of the MMTP by examining **Thai nursery workers' knowledge of and attitudes towards the play environment**. The knowledge and attitudes of the three sample groups were compared; there were two pairs for comparison.

Figure 3.8 illustrates the data collection procedures carried out.

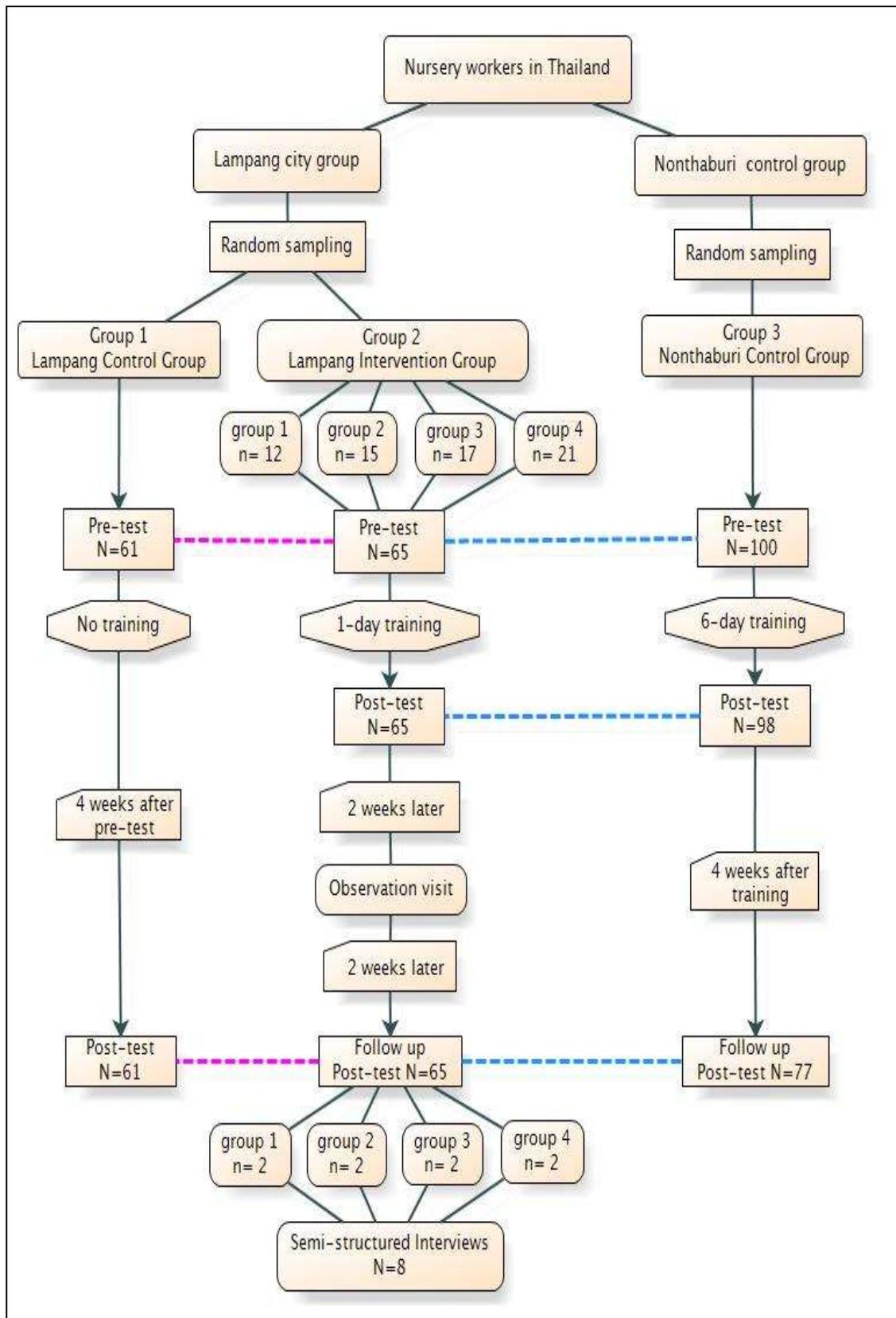


Figure 3.8: Data Collection Process in Phase I: Part A

The first comparison was between the Lampang intervention group and Nonthaburi control group. The nursery workers' knowledge and attitudes were measured at the pre-test, first post-test and second (follow-up) post-test stages.

For the Lampang intervention group, the researcher visited the participants' childcare centres (two to three childcare centres per day) two weeks after training. Using the guidance for observational visits (see Appendix 3.10), the focus of this procedure was to observe how the nursery workers applied what they learnt from the MMTP training.

Four weeks after training, the participants in the Lampang intervention group were tested again on their knowledge of and attitudes towards the play environment in order to examine knowledge and attitudes retention (the second post-test).

Two weeks after the second post-test, the researcher conducted interviews with two nursery workers (the interviewees were selected due to having the top two highest differences between their pre- and second post-test scores) from each group, in order to explore and explain their experiences. Eight nursery workers in total were interviewed about their opinions on the MMTP training. Data were collected using semi-structured interviews, tape-recorded in the afternoon during the children's nap time.

The nursery workers in the Nonthaburi control group were tested before training (pre-test) and immediately after training on the sixth day (the first post-test). Four weeks after the official training, the participants received letters and questionnaires, which were completed and returned to the researcher.

There were no observation visits for the Nonthaburi control group. Because the Nonthaburi control group represented nursery workers who worked in different provinces of Thailand as described in section 4.1.1 (Chapter 4), it was difficult to make observation visits. In addition, the time and financial resource constraints made visits impossible.

The second comparison was between the Lampang intervention group and Lampang control group. The Lampang control group completed one post-test, four weeks after the pre-test, as this group did not undergo any training.

### 3.6.6 Data Analysis in Phase II: Part A

In sum, the effectiveness of the MMTP was measured using knowledge and attitudes questionnaires and semi-structured interviews. In Phase II, MCQs for measuring knowledge were sourced from CACHE (2010). The attitudes Likert scale used was adapted from Kabadayi's study (2006). After the questionnaires were tested for reliability and validity in Hang Chat district (Lampang province), the MMTP training was

conducted in Mueang Lampang district (Lampang province). Research hypotheses concerning the knowledge and attitudes of Thai nursery workers towards the play environment were determined by comparing three sample groups.

The choice of parametric or non-parametric tests to assess research hypotheses depends on the distribution of the data. Many parametric tests are based on the normal distribution (Field 2009). However, the central limit theorem states that when the sample size is greater than 30, the sampling distribution will follow a normal distribution regardless of the underlying population distribution (Field 2009; Bryman & Cramer 2011; Field et al. 2012). The total sample in this study consisted of 226 participants, which is large enough to be confident that the sampling distribution is normally distributed. It is therefore appropriate to use the analysis of variance, a parametric method, to analyse the data described here.

Since the Levene's test of homogeneity of variances showed no statistically significant differences, the analysis of variance was used to assess the differences between the independent groups. Separate analyses were conducted in order to assess differences between the groups in each dependent variable: the knowledge score and the attitudes score. The purpose of the analysis of variance (ANOVA) was to assess the impact of the independent variable (the MMTP intervention) on the dependent variables of knowledge and attitudes.

Data were analysed using the Statistical Package for the Social Sciences (SPSS) version 19 and illustrated in tables (see Chapter 4). In order to test the hypotheses, statistical significance was defined at the 5% level. Statistical analysis was performed on the data as follows:

1. The demographic data were analysed using descriptive statistics (frequency, percentage, means, standard deviations, chi-square test and one-way analysis of variance).
2. The mean scores (standard deviation) of knowledge and attitudes at the pre-test, first post-test and second post-test stages were compared.
3. A paired samples t-test was employed to compare the differences in mean scores within the three groups in the pre-test, first post-test and second post-test.
4. A sample t-test was conducted by an independent student in order to compare the difference in mean scores between two pairs: the first pair was the Lampang intervention group and Lampang control group at two points in time (the pre-test and second post-test) and the second pair was the Lampang intervention group and Nonthaburi control group at three points in time (the pre-test, first post-test and second post-test).

5. The independent sample t-test was used again to compare the change in scores between the Lampang intervention group and Nonthaburi control group in the first post-test, and between all three groups in the second post-test.
6. The one-way analysis of covariance (ANCOVA) was used to assess the effect of covariates such as age, years of experience, educational background and number of children per nursery worker on the change in scores in the first and second post-tests.

After analysis, these results were supported by transcription and analysis of the semi-structured interviews of the eight nursery workers selected for interview as described above. The results of the analysis were consolidated in order to find solutions to the problems and make suitable adjustments to the MMTP training for its further development.

Research Hypotheses:

1. Nursery workers in the Lampang intervention group would have a greater improvement in knowledge and attitudes scores pertinent to the importance of the play environment in the first and second post-tests compared with the pre-test.
2. Nursery workers in the Lampang intervention group would have a greater improvement in knowledge and attitudes scores pertinent to the importance of the play environment than the Nonthaburi control group when assessed in the first post-test.
3. Nursery workers in the Lampang intervention group would have a greater improvement in knowledge and attitudes scores pertinent to the importance of the play environment than those in the two control groups when assessed in the second post-test.

### 3.7 Research Methods in Phase II: Part B

The researcher was interested in exploring the results from the quantitative data collected during Phase II: Part A of the study. Explanatory design is used to provide an account of phenomena by exploring its causes and reasons (Edmonds & Kennedy 2013). This researcher employed the explanatory-sequential approach for Phase II: Part B. The resulting qualitative data were used in the subsequent interpretation and clarification of the results from the quantitative data analysis.

Figure 3.9 shows how the mixed methods sequential explanatory design employed quantitative data collection in Phase II: Part A (questionnaires) followed by the

qualitative Phase II: Part B (semi-structured interviews), merging data sources during the interpretation and analysis. This helped to further explore and explain the experiences of the MMTP-trained nursery workers with the top two highest differences in their pre- and follow-up post-test scores in the Lampang intervention group.

**Another purpose was to explore the quantitative results, focus on nursery workers'** views of the MMTP training and explore the facilitators and barriers they found in applying the MMTP to their work. The results of the analysis were consolidated in order to find solutions to the problems and make suitable adjustments to the MMTP training for its further development.

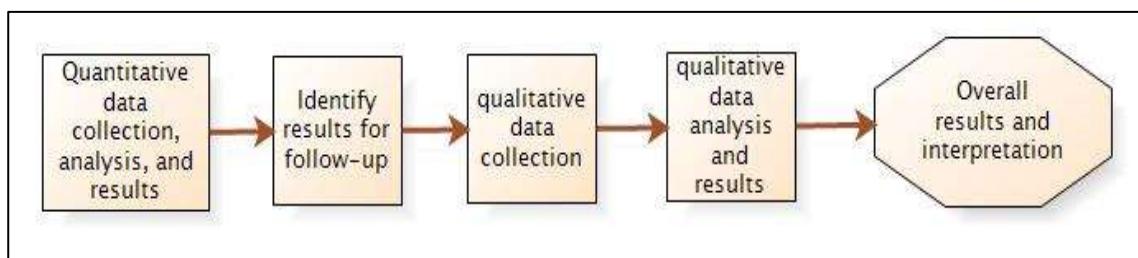


Figure 3.9: Follow-up Exploration Design Using Semi-Structured Interviews (Edmonds & Kennedy 2013)

In order to collect qualitative data, the researcher considered two methods: individual interviews and focus group interviews. Both methods are appropriate candidates for data collection for the above-mentioned purpose. After careful consideration, however, individual interviews were chosen. While focus group interviews would allow exchange of experiences and ideas between participants, leading to richness of data, it was not possible for this study. The focus group interview would require nursery workers to travel from their workplace to the meeting. Because of staff shortage, this was not possible, especially in childcare centres with high workload and one nursery worker. Individual interviews, however, could be organised at the convenience of the participating workers. It was therefore clear that individual interviews were the most appropriate and practical method of data collection for this phase.

### 3.7.1 Interviews

Interviews are one of the most common methods of data collection in qualitative approaches (Dicicco-Bloom & Crabtree 2006; Andrew & Halcomb 2009). The qualitative approach is often characterised by an emphasis on the context in order to achieve an understanding of the social phenomenon that the researcher is studying (Bryman 2012). The main task in interviewing is to understand the meaning of what the interviewees say (Kvale & Brinkmann 2009).

### 3.7.2 Types of Interviews

Fontana and Frey (2005) categorised qualitative interviews into unstructured, semi-structured and structured. Berg and Bruce (2012) illustrated the three types of interviews, (see Table 3.23) showing the differences between structured interviews typically used by survey researchers (often producing quantitative data) and less structured interviews, which generally tend to be the practice of researchers collecting qualitative data (Holloway & Wheeler 2010; Bryman 2012).

Topics	Structured Interview	Semi-Structured Interview	Unstructured Interview
Feature of interview (Berg & Bruce 2012)	<p>Interviewer follows scripted questions; no deviation from question order.</p> <p>Wording of each question asked exactly as written.</p> <p>No adjusting of level of language.</p> <p>No clarifications or answering of questions about the interview.</p> <p>No additional questions may be added.</p> <p>Similar in format to pencil-and-paper surveys (although the latter almost always use fixed responses).</p>	<p>Asymmetrical structure. Interviewer initiates questions and uses probes in response to interviewee's descriptions.</p> <p>Questions may be re-ordered during the interview.</p> <p>Level of language may be adjusted.</p> <p>Interviewer may answer questions and make clarifications.</p> <p>Interviewer may add or delete probes between interviews.</p>	<p>Free-flowing conversation.</p> <p>Completely unstructured.</p> <p>No set order to any questions.</p> <p>Both interviewer and interviewee initiate questions and discuss topics.</p> <p>Level of language may be adjusted.</p> <p>Interviewer may answer questions and make clarifications.</p> <p>Interviewer may add or delete questions between interviews.</p>
Strengths (David & Sutton 2004; Lawrence 2007)	<ul style="list-style-type: none"> <li>- The researcher has control over the topics and the format of the interview because a detailed interview guide is used.</li> <li>- There is a common format, which makes it easier to analyse, code and compare data.</li> <li>- A detailed interview guide can permit inexperienced researchers to do a structured interview.</li> <li>- Non-verbal cues, such as facial expressions and gestures can be recorded.</li> </ul>	<ul style="list-style-type: none"> <li>- The researcher can prompt and probe deeper into the given situation.</li> <li>- The interviewers are able to probe or ask more detailed questions <b>of respondents'</b> situations and not adhere only to the interview guide.</li> <li>- The researcher can explain or rephrase the questions if respondents are unclear about the questions.</li> </ul>	<ul style="list-style-type: none"> <li>- There are no restrictions placed on questions.</li> <li>- It is useful when little or no knowledge exists about a topic.</li> <li>- It is flexible and the researcher can investigate underlying motives.</li> </ul>
Drawbacks (David & Sutton 2004; Lawrence 2007)	<ul style="list-style-type: none"> <li>- It adheres too closely to the interview guide and may result in not probing for relevant information.</li> <li>- The respondents may interpret or understand the questions in an unwanted manner.</li> <li>- <b>The researcher's</b> verbal comments and non-verbal cues can cause bias and have an influence upon <b>respondents' answers.</b></li> </ul>	<ul style="list-style-type: none"> <li>- Inexperienced interviewers may not be able to ask prompt questions.</li> <li>- Inexperienced interviewers may not probe into a situation to find out reasons, or ask for explanations.</li> </ul>	<ul style="list-style-type: none"> <li>- It can be inappropriate for inexperienced interviewers.</li> <li>- The interviewers may be biased and ask inappropriate questions.</li> <li>- Respondents may talk about irrelevant and inconsequential issues.</li> <li>- It may be difficult to code and analyse the data.</li> </ul>

Table 3.22: Comparing Three Types of Interviews

### 3.7.3 Semi-Structured Interviews

The questions for semi-structured interviews are contained in an interview guide (not an interview schedule as in survey research) with a focus on the issues to be covered and the lines of inquiry to be followed (Holloway & Wheeler 2010). Semi-structured interviews are generally organised around a predetermined set of open-ended questions (questions that prompt discussion) with the opportunity for the interviewer to explore further particular themes or responses. Unstructured interviews, meanwhile, are conducted in conjunction with the collection of observation data (Dicicco-Bloom & Crabtree 2006).

In semi-structured interviewing, the interviewer has some discretion over the order in which questions are asked, but the questions are standardised, and probes may be provided to ensure that the researcher covers the correct material (Harrell et al. 2009). This kind of interview collects detailed information in a style that is somewhat conversational. Semi-structured interviews are often used when the researcher wants to delve deeply into a topic and to understand thoroughly the answers provided (Cohen D & B. 2006; Madill 2011).

### 3.7.4 Why Semi-Structured Interviews Are Used

Many researchers use semi-structured interviews because questions can be prepared ahead of time. This allows the interviewer to be prepared and appear competent during the interview. Semi-structured interviews also allow informants the freedom to express their views in their own terms. Moreover, they can provide reliable, comparable qualitative data (Cohen D & B. 2006; Fletcher et al. 2011; Lloyd-Williams et al. 2011; Madill 2011; Sandberg & Heden 2011).

Qualitative approaches can contribute in several ways to development and evaluation. Creswell et al. (2006) summarised the additional possible reasons for including qualitative data collection in an intervention trial, as shown in Table 3.24.

Qualitative data are collected before an intervention trial:

- To develop an instrument for use in the intervention trial (when a suitable instrument is not available)
- To develop good recruiting/consent practices for participants in an intervention trial
- To understand the participants, context, and environment so that the intervention will work (i.e. applying interventions to real-life situations)
- To document a need for the intervention
- To compile a comprehensive assessment of baseline information

<p>Qualitative data are collected during an intervention trial:</p> <ul style="list-style-type: none"> <li>- To validate the quantitative outcomes with qualitative data representing the voices of the participants</li> <li>- To understand the impact of the intervention on participants (for example barriers/facilitators)</li> <li>- To understand unanticipated participant experiences during the trial</li> <li>- To identify key constructs that might potentially impact the outcomes of the trial, such as changes in the sociocultural environment</li> <li>- To identify resources that can facilitate the conduct of the intervention</li> <li>- To understand and depict the process experienced by the experimental groups</li> <li>- To check the fidelity of the implementation of procedures</li> <li>- To identify potential mediating and moderating factors</li> </ul>
<p>Qualitative data are collected after an intervention trial:</p> <ul style="list-style-type: none"> <li>- To understand how participants view the results of the trial</li> <li>- To receive participant feedback in order to revise the treatment</li> <li>- To help explain the quantitative outcomes, such as under-represented variations in the trial outcomes</li> <li>- To determine the long-term sustained effects of an intervention after a trial</li> <li>- To understand in more depth how the mechanisms work in a theoretical model</li> <li>- To determine if the processes in conducting the trial had treatment fidelity</li> <li>- To assess the context when comparisons of outcomes are made with baseline data</li> </ul>

Table 3.23: Research Objectives for Collecting Qualitative Data Alongside an Intervention Trial (Creswell et al. 2006)

In this study, semi-structured interviews were conducted after the intervention trial in order to understand how the nursery workers viewed the results of the MMTP and to attain feedback for revising the programme. These results helped to explain the quantitative outcomes, such as the under-represented variations in the intervention outcomes.

In the long term, the intervention had sustained effects on nursery workers after training. This researcher was able to explore the reasons for the findings of the trial and explain the variations in effectiveness within the sample. It also allowed nursery workers to discuss and raise issues that the researcher may not have considered.

### 3.7.5 Population and Sample

The population in Phase II: Part A was 65 nursery workers in the Lampang intervention group who were invited to one of four training days. Four weeks after training, the participants were tested using the second post-test questionnaires. After the second post-test, the mean scores of the knowledge MCQs were analysed.

Sampling in Phase II: Part B related to the subset of the Lampang intervention group. In order to best explain the issue of interest, Patton (2002) suggests maximum variation sampling technique for data collection—that is, sampling participants with different backgrounds, from different workplace structures and processes, with varying

performance or outcomes. This researcher initially considered interviewing participants from both high and low performance groups; however, she later decided to sample participants from the high performance group (i.e. participants with the top two highest differences in scores) only. This decision was based on considerations about the time availability of the project. As mentioned earlier in this chapter, this researcher was left with one possible method of data collection: semi-structured interviews. This researcher limited the sample size to eight participants on the grounds that this number would still allow all the interviews to be completed, transcribed and analysed within a given time while providing adequate data to answer the research questions about MMTP effectiveness and barriers to using it. These considerations are in line with expert advice on numbers for qualitative interviews (Baker & Edwards 2012). Once the sample size was determined, potential participants were identified for semi-structured interviews.

Theoretically, participants from both low and high performance groups should be interviewed in order to reflect maximum variation sampling principle (Patton 2002). At this point, this researcher seriously had to consider the trade-off between depth and breadth of data collected from heterogeneous (i.e. both high and low performing) and homogeneous (i.e. high or low performing) groups. Given the small sample size (eight), the heterogeneous group would give breadth to the data but might lack depth. On the other hand, the homogeneous group would give depth to the data but might lack breadth (Patton 2002; Guest et al. 2006). Because the focus of the semi-structured interviews in this study was on in-depth understanding of MMTP application, the homogenous group (i.e. the high performers) was chosen in favour of depth of data. While low performers could give useful information about why they could not retain knowledge, this information was considered less useful than the information explaining positive outcomes. This was because the quantitative results already indicated that MMTP was effective in improving knowledge. The need to explain positive results (i.e. improved knowledge) was therefore the priority, especially as there was only one choice of homogeneous participant selection in favour of depth of data. The high performers were therefore chosen. On examination of the top eight performers, it was revealed that they worked in childcare centres with differing level of structures, resources and support. This may suggest that the MMTP was feasible in practice regardless of structural characteristics of childcare centres. Eliciting information from these nursery workers would help to explain how they strove to succeed in knowledge retention despite structural inadequacies.

Eight nursery workers were purposively sampled for the interview, two from each of the four sets in this group. The participants with the top two highest differences in scores (the second post-test minus the pre-test) were invited to take part in the semi-structured interviews (see Figure 3.10).

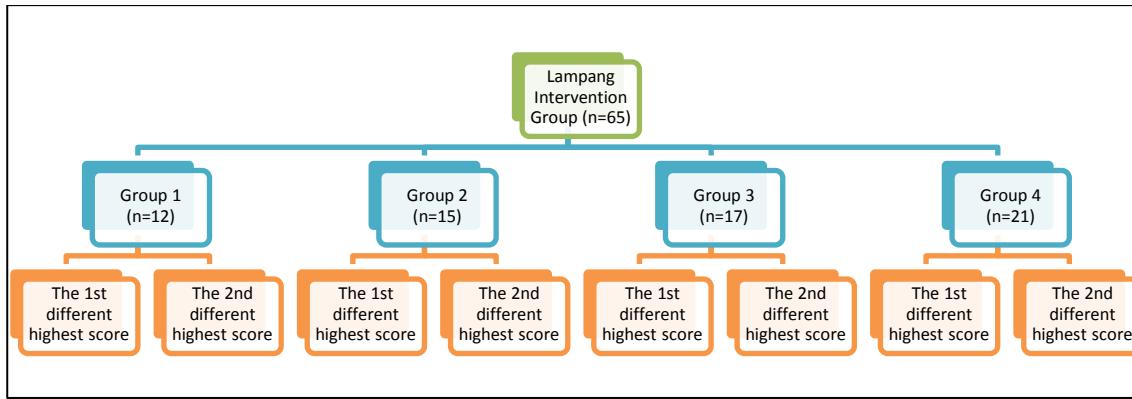


Figure 3.10: Sampling in Phase II: Part B

### 3.7.6 Data Analysis in Phase II: Part B

There are three broad approaches to analysing the data gathered in health-related research: grounded theory, framework analysis and thematic analysis. The three approaches are methodologically similar analytic frameworks, but the manner in which themes, concepts and categories are managed varies considerably between the approaches (Boyatzis 1998; Pope et al. 2006; Howitt & Cramer 2011).

Thematic analysis and grounded theory are methodologically similar analytic frameworks but the manner in which themes, concepts and categories are managed varies considerably between these approaches. (Boyatzis 1998; Braun & Clarke 2006; Fereday & Muir-Cochrane 2006; Guest et al. 2012).

Thematic analysis involves processes of induction and deduction; it creates induction themes and verifies deduction of data. Conversely, the analytical process of **grounded theory** is undertaken until the point of ‘saturation’, when no further analytical constructs can be identified; after finding that data is duplicated or that there is no more new data, the researcher stops gathering it (Pope et al. 2006; Corbin & Strauss 2008; Strauss & Corbin 2011).

Framework analysis, meanwhile, is especially suited to policy research, in which the objectives of the investigation relate to the requirements of the funding body rather than emerging from a reflexive research process. The analytical process is similar to thematic analysis but tends to be more explicit and more strongly informed by *a priori* reasoning (Pope et al. 2006).

During this phase, this researcher conducted a thematic analysis which examined the data in order to extract core themes that could be distinguished within transcripts. A theme is a category identified by the analyst through data; the research focus then builds on codes identified in transcripts (Bryman 2012).

The qualitative method in this study had already utilised another type of analysis, content analysis. However, the content analysis in Phase I: Part A and thematic analysis in Phase II: Part B had different purposes. The thematic coding of semi-structured interviews refers to the method of categorising segments of qualitative data into meaningful themes. Therefore, thematic analysis is more exploratory than content analysis. It aims to 'understand' rather than 'know' the data. Data is read thoroughly to look for themes that arise.

Thomas and Harden (2008) illustrated that thematic synthesis has three stages: the coding of text line-by-line, the development of descriptive themes and the generation of 'analytical themes'. While the development of descriptive themes involves analysing data in primary qualitative studies, analytical themes represent a stage of interpretation whereby the reviewers go beyond the primary studies and generate new interpretive constructs, explanations or hypotheses. Braun and Clarke (2006) provided a guide to the six phases of conducting thematic analysis (see Table 3.25).

Phase	Description of the process
1. Familiarising yourself with your data:	Transcribing data (if necessary), reading and rereading the data, noting down initial ideas.
2. Generating initial codes:	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. Searching for themes:	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Reviewing themes:	<b>Checking the themes' work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic 'map' of the analysis.</b>
5. Defining and naming themes:	Ongoing analysis to refine the specifics of each theme and the overall story the analysis tells, generating clear definitions and names for each theme.
6. Producing the report:	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating the analysis back to the research question and literature, producing a scholarly report of the analysis.

Table 3.24: Phases of Thematic Analysis (Braun & Clarke 2006)

The process of analysing data from the semi-structured interviews involved the following steps (Creswell 2009):

Step 1: The data were organised and prepared for analysis. The researcher analysed the semi-structured interview data by transcribing the interviews verbatim from digital recordings. The interviews were transcribed into text and the document formatted so that the margin could be used for identifying individual bits of data. It was helpful to assign line numbers as identifiers for cross-referencing.

Step 2: After transcribing the interviews verbatim, the researcher read and reread through all the data from the digital recordings and notes made during the interviews. During the first reading, the researcher made note of major issues in order to acquire a sense of the various topics embedded in the data. The researcher then reread the text and annotated thoughts in the margin by examining the text closely, line by line, to facilitate a micro-analysis of the data.

Step 3: Items of interest were sorted into themes. The researcher identified themes by organising items relating to similar topics into categories. Computers were used to paste the line references together; the analysis commenced while interviews were still being conducted, as codes were sorted into appropriate categories. Software programs were used to assist with data management and analysis; these programs do not analyse data but they can be a tremendous aid in data management and the analysis process (Dicicco-Bloom & Crabtree 2006). At this stage, the researcher tried to keep the themes as simple as possible. Flexibility in the categorisation process was used, whereby any reordering of the category clusters of categories could help to create and redefine the initial themes.

Step 4: The coding process was used to generate a description of the setting, categories and themes for analysis. Riley (1996) suggested the technique of coding data through the use of coloured highlighter pens, which were used to identify common themes. This researcher used highlighter pens of various colours to mark the copies (keeping the originals intact) when selecting common words or phrases. This technique allows different colours to be used for emerging themes, enabling several people to analyse the data set for commonalities and emerging themes (Riley 1996).

### 3.7.7 Trustworthiness and Authenticity in Phase II: Part B

**In this study, credibility was assured by the use of participants' descriptions of their own experiences. Transferability was demonstrated by a dense description of research design, analysis and findings. Confirmability and dependability were enhanced by the researcher's detailing of all influences on the data, and by two Ph.D. students and two supervisors' examination of the process and outcomes of the study, which involved reviewing transcripts.**

According to Bryman (2012), **researchers' interpretation of participants' statements** can be validated by giving participants the opportunity to discuss the results of the study with the researcher. The participants have been given the opportunity to give **feedback on the results in this study. This is a way of confirming the study's validity** (Sandberg & Heden 2011).

## 3.8 Ethical Considerations and Data Protection Issues

### 3.8.1 Permission to Conduct This Study in Thailand

All documentation was prepared in English to facilitate supervision and extended peer review. After the documentation was agreed by peer review at the University of Southampton, the research was approved by the Ethical Review Committee for Research on Human Subjects, Lampang Hospital, Thailand; this approval took a few weeks to obtain (see Appendix 3.11).

After obtaining the approval, the researcher contacted both the Director of Lampang Provincial Office for Local Administration and the Director of the Bureau of Local Educational Development and Coordination under the Department of Local Administration in Bangkok for permission to conduct this study. Permission from the two organisations was granted (see Appendix 3.12). These letters show that the authorities allowed and were willing for the researcher to conduct this study in Mueang Lampang and Nonthaburi province.

### 3.8.2 Participants' Confidentiality and Anonymity

This study was conducted with full human rights protection. Only eligible subjects were asked to participate in the study. All participants were given a Participant Information Sheet, including details of what to expect if they took part in the study (see Appendix 3.13, 3.14 and 3.15). The researcher explained the purposes of the study, the research procedures, benefits and length of time of the study. The subjects who agreed to participate were informed and assured that the data would be kept strictly confidential and reported anonymously. They were informed that they had the right to withdraw from this project at any time without prejudice and for any reason. They were also asked to sign a consent form (see Appendix 3.16)

### 3.8.3 Protecting and Managing Data

The data from the questionnaires and digital recorder contain personal information about the participants, which will be kept secure by being coded and stored securely in electronic hardware at the Faculty of Health Sciences at the University of Southampton, United Kingdom. Only the research student and supervisors will have access to these, as secure passwords will be used. The length of storage will be in accordance with the University of Southampton guidelines. Data will be stored for ten years.

### 3.9 Chapter Summary

This study employed methods based on a pragmatic paradigm. A mixed method research design was set up to investigate the research question. The first phase was a qualitative method, focusing on the content analysis from one Thai and three UK curricula in order to design a MMTP and data collection research instruments. In the second phase, which used a quantitative method (quasi-experiment), the intervention was carried out with 226 nursery workers in Thailand. To further explore this result, the following phase used semi-structured interviews with eight nursery workers. The results from Phase II (both Part A and Part B) will be described in Chapter 4: Research Results and Data Analysis.

## Chapter 4: Research Results

There were two phases to this study. In Phase I, previously discussed in Chapter 3, this researcher designed a multimedia teaching package (MMTP) and the data collection instruments based on the summative content analysis results. In Phase II, the effectiveness of the MMTP was assessed with the intention of enhancing Thai nursery workers' knowledge of and attitudes towards play and the play environment.

The research employed a mixed methods design, a sequential embedded quasi-experimental one, which requires both quantitative and qualitative analyses.

Quantitative analysis methods were used for comparisons between three groups: the first group received the MMTP training (the Lampang intervention group), the second received no training (the Lampang control group) and the third group received the official government training (the Nonthaburi control group).

The qualitative analysis focused on data gleaned from a series of semi-structured interviews of eight nursery workers in the Lampang intervention group; the individuals with the highest and lowest differences between their test scores were selected (the score from the second post-test minus that from the pre-test). Two interviewees were drawn from each of the four separate training days, referred to here as subgroups.

This researcher expected that the results gained from this phase would answer the **research question, 'Will a multimedia teaching package enhance knowledge of and attitudes towards the importance of the play environment for Thai nursery workers?'**

The researcher set the hypotheses for this study as follows:

Hypothesis 1: Nursery workers in the Lampang intervention group would have a greater improvement in knowledge and attitudes scores pertinent to the importance of play and the play environment in the first and second post-tests compared with the pre-test.

Hypothesis 2: Nursery workers in the Lampang intervention group would have a greater improvement in knowledge and attitudes scores pertinent to the importance of play and the play environment than the Nonthaburi control group when assessed in the first post-test.

Hypothesis 3: Nursery workers in the Lampang intervention group would have a greater improvement in knowledge and attitudes scores pertinent to the importance of play and the play environment than those in the two control groups when assessed in the second post-test.

The complete findings of this study are presented in five parts as follows:

Part 1: Descriptive statistics describing each group in terms of personal data and the nurseries in which they worked (Table 4.1 to 4.2).

Part 2: Demonstrating that the tools used to assess knowledge and attitudes were reliable.

Part 3: The scores for knowledge and attitudes for each group in the pre-test and how these scores changed in the first and second post-tests, including statistical tests relating to the research hypotheses listed above (Table 4.3 to 4.5).

Part 4: A description of the relationship between variables that may affect the response to the training as seen by the change in knowledge and attitudes scores. This includes potential covariates such as age, years of experience and number of children per nursery worker. The relationship between the pre-test scores and change is also considered under this heading (Table 4.6 summarises the effect of covariates on change immediately after training - the first post-test - and Table 4.7 summarises the effect of covariates on change observed four weeks after training - the second post-test). The correlation between knowledge and attitudes in the three groups at the three points in time is presented in Table 4.8.

Part 5: Presenting the results of the semi-structured interviews with the eight nursery workers in the Lampang intervention group.

## 4.1 Part 1: Descriptive Statistics

### 4.1.1 Sample Size

Data collection was carried out from February 2011 to August 2011 in Thailand over three periods: pre-test, first post-test and second post-test including the semi-structured interviews. The participants in this study consisted of 226 Thai nursery workers who met the inclusion and exclusion criteria. They were randomly assigned into one intervention group and two control groups, as presented in Table 4.1.

There were 65 participants in the Lampang intervention group and 61 in the Lampang control group. Response rates for both groups were 100% in all tests.

In the Nonthaburi control group, there were 100 participants at the pre-test, from five provinces: Trung province, Lopburi province, Samut Songkhram province, Saraburi province and Ubonratchathani province. At the first post-test, 98 participants returned postal questionnaires. The response rate was thus 98.0%. At the second post-test, 77

questionnaires were returned by post out of 92 addresses surveyed. The response rate was 83.7% (see Table 4.1).

Group	Lampang Intervention	Lampang Control	Nonthaburi Control	Total per test
Pre-test	65	61	100	226
Treatment	One-day training on Saturday by the researcher (four Saturdays)	No training	Six-day training organised by the Department of Local Administration (DLA)	
First post-test	65	Not assessed	98	163
Second post-test	65	61	77	203
Valid percentage (%)	100	100	83.70	

Table 4.1: Comparing the Response Rate of Participants in Each Group by Testing

#### 4.1.2 Demographic Data of the Participants

Demographic Data	Lampang Intervention	Lampang Control	Nonthaburi Control	Total three groups	F statistic	$\chi^2$
Number of participants recruited	65	61	100	226	-	-
% Women	100	100	100	100	-	-
Age Mean* (sd) Minimum-maximum	39.29 (7.27) 25-55	39.15 (7.95) 26-56	34.34 (5.34) 23-50	37.06 (7.09) 23-56	14.84**	-
Status n (%) Single Married Divorced Widowed No answer	9 (13.85) 54 (83.08) 2 (3.08) - -	10 (16.39) 50 (81.97) 1 (1.64) - -	30 (30) 64 (64) 3 (3) 1 (1) 2 (2)	49 (21.68) 168 (74.34) 6 (2.65) 1 (0.44) 2 (0.88)	-	12.51 <sup>ns</sup>
Education level n (%) No degree in Early Childhood Education Bachelor degree in Early Childhood Education*	15 (23.08) 50 (76.92)	15 (24.59) 46 (75.41)	41 (41) 59 (59)	71 (31.42) 155 (68.58)	-	7.68*
Years of work experience n (%) 1-5 years 6-10 years 11-15 years Over 15 years	21 (32.31) 15 (23.08) 12 (18.46) 17 (26.16)	14 (22.95) 16 (26.23) 11 (18.03) 20 (32.79)	39 (39) 28 (28) 21 (21) 12 (12)	74 (32.74) 59 (26.11) 44 (19.47) 49 (21.68)	-	11.96 <sup>ns</sup>
Years of work experience Mean* (sd) Minimum-maximum	11.02 (8.18) 1-34	12.89 (8.45) 3-39	8.56 (5.17) 1-18	10.43 (7.30) 1-39	7.32**	-
Number of children per childcare centre n (%) <50 50-80 81-100 101-160 >160	43 (66.15) 22 (33.85) - - -	39 (63.93) 22 (36.07) - - -	48 (48) 32 (32) 10 (10) 7 (7) 3 (3)	130 (57.5) 76 (33.6) 10 (4.4) 7 (3.1) 3 (1.3)	-	28.24**
Number of nursery workers per childcare centre n (%) 1 2 3 Over 4	8 (12.31) 27 (41.54) 13 (20) 17 (26.16)	7 (11.48) 16 (26.23) 17 (27.87) 21 (34.43)	5 (5) 33 (33) 19 (19) 43 (43)	20 (8.85) 76 (33.63) 49 (21.68) 81 (35.84)	-	9.90 <sup>ns</sup>
Number of children per nursery worker Mean* (sd) Minimum-maximum	14.93 (4.16) 8-23.5	14.22 (6.13) 7-40	17.55 (4.80) 7.5-40	15.70 (5.23) 7-40	9.99**	-
<b>Children's minimum age</b> n (%) <12 months 13-24 months 25-36 months	4 (6.15) 59 (90.77) 2 (3.08)	2 (3.28) 52 (85.25) 7 (11.48)	- 30 (30) 70 (70)	6 (2.65) 141 (62.39) 79 (34.96)	-	99.70**
<b>Children's maximum age</b> n (%) 25-36 months 37-48 months 49-60 months 61-72 months 73-84 months	- 30 (46.5) 33 (50.77) 2 (3.08) -	- 31 (50.82) 30 (49.18) - -	6 (6) 50 (50) 31 (31) 10 (10) 3 (3)	6 (2.65) 111 (49.12) 94 (41.59) 12 (5.31) 3 (1.33)	-	24.36*

\*\*=p<0.001, \* =p<0.05, ns=not statistically significant

Table 4.2: Demographic Data of the Participants

The demographic data of all participants are presented in Table 4.2. This includes descriptive statistics relating to personal data and the nurseries in which they work. The data include gender, age, status, education level, years of work experience, number of children per childcare centre, number of nursery workers per childcare centre, **number of children per nursery worker and children's minimum and maximum age**.

The majority of these nursery workers were working in state childcare centres under the control of the Sub-District Administrative Organisation (SAO) of the Department of Local Administration (DLA), which is responsible for the majority of childcare centres in Thailand.

The statistical significance of differences in demographic data between the three groups, worked out first by analysis of variance (ANOVA) in age, years of experience and number of children per nursery worker, and secondly by chi-square test ( $\chi^2$  test) on status, education level, number of children per childcare centre, number of nursery workers per childcare centre, **children's minimum age and children's maximum age**, is summarised in Appendix 4.1 and 4.2.

All 226 participants were female (100%) with an age range of 23-56 years. The average age of the Nonthaburi control group was lower than the Lampang groups (Mean=34.34,  $sd=5.34$ ). The majority of participants were married (74.34%), 21.68% were single, 2.65% were divorced, 0.44% widowed and 0.88% gave no answer. **Nearly 70% of the participants had graduated with at least a bachelor's degree** in Early Childhood Education (n=155).

Analysis of the demographic data shows that nursery workers in the Lampang groups were on average five years older than those in the Nonthaburi control group ( $p<0.05$ ) and **were more likely to have a bachelor's degree** in Early Childhood Education (77% and 59%).

In terms of work experience, 32.74% of participants had worked in childcare centres for between one and five years (n=74). 57.5% of participants had less than 50 children in their centre (n=130). Most commonly, there were over four nursery workers per centre (n=81, 35.84%). The minimum age for children at the childcare centres was 13-24 months (n=141, 62.39%), while the maximum age was 37-48 months (n=111, 49.12%).

## 4.2 Part 2: Reliability of Questionnaires

In order to score nursery workers' knowledge of the play environment, 25 multiple choice questions with four distractors were used. Items varied according to the contents. The criteria for scoring were 1 mark for a correct answer and no marks for an incorrect answer. The total possible score ranged from 0 (all incorrect) to 25 (all correct), with higher scores indicating better knowledge of play environment issues.

In order to score nursery workers' attitudes towards the play environment, a Likert scale with four response categories - Strongly Agree, Agree, Disagree, and Strongly Disagree - was used. The scale points for positive questions were 4, 3, 2, 1, and the scale points for negative questions were 1, 2, 3, 4. Negative items were reversed in order to maintain a homogenous score. There were 36 items, resulting in a total possible score ranging from 36 to 144. A higher score would indicate that the nursery worker generally held more positive attitudes towards the play environment.

In this study, the questionnaires were piloted with 39 Thai nursery workers in Hang Chat district, Lampang province. These participants had similar characteristics to the sample groups. **Cronbach's alpha values by domain were** 0.809 for knowledge MCQs and 0.816 for attitudes Likert scales. These values suggest that the measures used in the questionnaires had acceptable reliability.

## 4.3 Part 3: Knowledge and Attitudes at Pre-test, First Post-test and Second Post-test of Participants in Three Groups

This part shows the scores in knowledge and attitudes for each group in the pre-test (see Table 4.3) and how these scores changed in the first post-test (see Table 4.4) and the second post-test (see Table 4.5).

### 4.3.1 Knowledge and Attitudes at Baseline (Pre-test)

The comparison of the differences in mean score of knowledge and attitudes in the pre-test was carried out via an independent sample t-test between two pairs: the first pair was the Lampang intervention group and Lampang control group, and the second pair was the Lampang intervention group and Nonthaburi control group (see Table 4.3 and Appendix 4.3). Table 4.3 presents the mean score of knowledge and attitudes for each group in the pre-test.

Baseline (pre-test)	Lampang Intervention (n=65)	Lampang Control (n=61)	Nonthaburi Control (n=100)
Knowledge Mean and (sd)	14.32 (2.44)	16.28 (2.92)	14.68 (2.53)
Statistical significance of differences between groups	<p>The difference in the knowledge score between the Lampang intervention group and Lampang control group was statistically significant (<math>t=4.09</math>, <math>p&lt;0.001</math>).</p> <p>The difference in the knowledge score between the Lampang intervention group and Nonthaburi control group was not statistically significant (<math>t=0.90</math>, <math>p&gt;0.05</math>).</p>		
Attitudes Mean and (sd)	108.71 (6.83)	116.93 (8.75)	112.70 (9.17)
Statistical significance of differences between groups	<p>The difference in the attitudes score between the Lampang intervention group and Lampang control group was statistically significant (<math>t=5.90</math>, <math>p&lt;0.001</math>).</p> <p>The difference in the attitudes score between the Lampang intervention group and Nonthaburi control group was statistically significant (<math>t=3.01</math>, <math>p&lt;0.05</math>).</p>		

Table 4.3: Knowledge and Attitudes at Baseline (Pre-test)

#### Knowledge Scores at Baseline

On average, participants in the Lampang control group had higher knowledge scores (Mean=16.28,  $sd=2.92$ ) than those in the Lampang intervention group (Mean=14.32,  $sd=2.44$ ). There was a significant mean difference in the pre-test knowledge scores between the Lampang intervention group and Lampang control group ( $t=4.09$ ,  $p<0.001$ ).

Participants in the Nonthaburi control group also had higher knowledge scores (Mean=14.68,  $sd=2.53$ ) than those in the Lampang intervention group (Mean=14.32,  $sd=2.44$ ). However, there was no statistically significant mean difference in the pre-test knowledge scores between the Lampang intervention group and Nonthaburi control group ( $t=0.90$ ,  $p>0.05$ ).

#### Attitudes Scores at Baseline

The results revealed that the participants in the Lampang control group had higher scores (Mean=116.93,  $sd=8.75$ ) in attitudes than the Lampang intervention group (Mean=108.71,  $sd=6.83$ ). There was a big difference in the mean value of the pre-test attitudes scores between the Lampang control group and Lampang intervention group ( $t=5.90$ ,  $p<0.001$ ).

It was found that the participants in the Nonthaburi control group also had higher attitudes scores (Mean=112.70,  $sd=9.17$ ) than the Lampang intervention group (Mean=108.71,  $sd=6.83$ ). There was a significant mean difference in the pre-test attitudes scores between the Nonthaburi control group and Lampang intervention

group ( $t=3.01$ ,  $p<0.05$ ). Figure 4.1 below illustrates the difference in distribution of knowledge scores for the three groups.

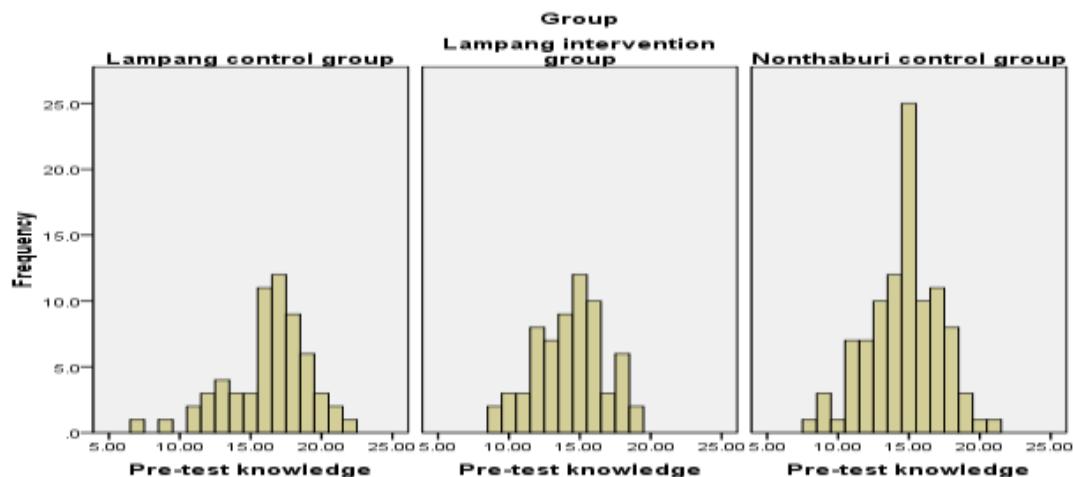


Figure 4.1: Comparing the Mean Score of Knowledge in the Pre-test among the Three Groups

In the Lampang intervention group, the minimum knowledge score was 9 and the maximum was 19. The mean score was 14.32. In the Lampang control group, the minimum knowledge score was 7 and the maximum was 22. The mean score was 16.28. Five participants had a knowledge score higher than 19. These differences in low and high scores contributed to the statistically significant differences reported above.

In the Nonthaburi control group, the minimum knowledge score was 8 and the maximum was 21. The mean score was 14.68. When compared with the Lampang intervention group, the mean was 14.32, a difference that was not statistically significant ( $p=0.371$ ).

Figure 4.2 below compares the Lampang intervention group's attitudes scores in the pre-test with the other two groups.

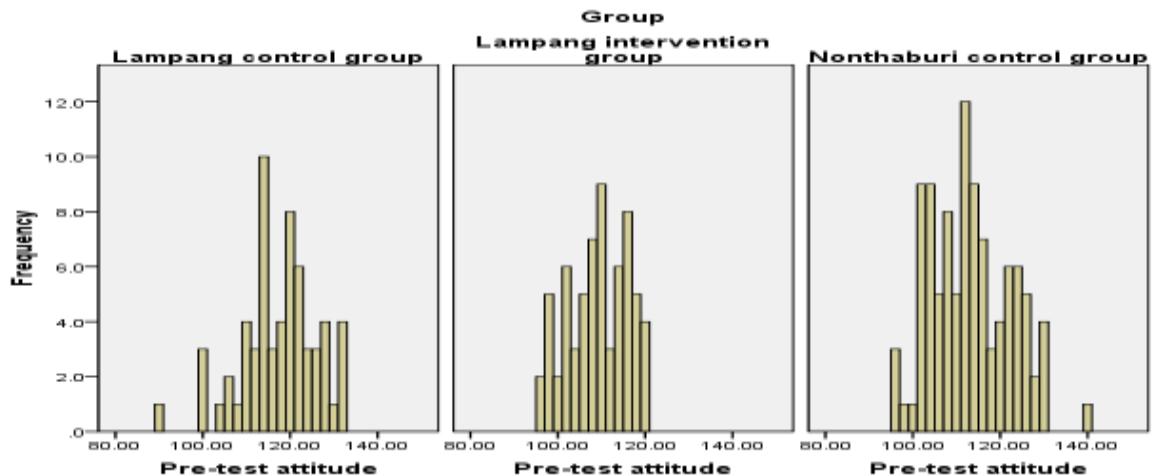


Figure 4.2: Comparing Attitudes Scores in the Pre-test among the Three Groups

In the Lampang intervention group, the minimum attitudes score was 96 and the maximum was 119. The mean score was 108.71 ( $sd=6.83$ ). In the Lampang control group, the minimum attitudes score was 90 and the maximum was 132. The mean score was 116.93 ( $sd=8.75$ ). There were 25 participants with an attitudes score higher than 119. In the Nonthaburi control group, the minimum attitudes score was 95 and the maximum was 140. The mean score was 112.70 ( $sd=9.17$ ). 25 participants had an attitudes score higher than 119. These differences contribute to the statistically significant ( $p<.001$ ) differences reported above.

#### 4.3.2 Knowledge and Attitudes at Baseline and the First Post-test

The comparison of the difference between the mean score of knowledge and attitudes in the first post-test and the baseline within each group used a paired samples t-test; for comparison between groups, an independent sample t-test was used.

Due to lack of follow up of participants in the Nonthaburi group during the first post-test and second post-test, the number of participants used for computation was not the same as in the pre-test (see Table 4.1). When comparing the mean between the pre-test and the first post-test, data from the 98 participants who remained in the study at the first post-test were used. Data from the 77 participants who remained in the study at the second post-test were used for the comparison of the pre-test and the second post-test.

Table 4.4 describes the immediate effect of the intervention (MMTP) on knowledge and attitudes and explains what changed between the pre-test and first post-test. How big was the change? Was it statistically significant?

First post-test	Lampang Intervention (n=65)		Lampang Control (n=61)		Nonthaburi Control (n=98)	
	Baseline	First post-test	Baseline	First post-test	Baseline	First post-test
Knowledge Mean and (sd)	14.32 (2.44)	20.00 (2.09)		Not assessed	14.66 (2.55)	15.12 (2.78)
Statistical significance of differences within group	Statistically significant ( $t=20.59$ , $p<0.001$ )				Not statistically significant ( $t=1.35$ , $p>0.05$ )	
Statistical significance of differences between group	The difference between the knowledge scores of the Lampang intervention group and Nonthaburi control group in the first post-test was statistically significant ( $t=12.05$ , $p<0.001$ ).					
Attitudes Mean and (sd)	108.71 (6.83)	122.45 (6.40)		Not assessed	112.62 (9.20)	112.98 (10.95)
Statistical significance of differences within group	Statistically significant ( $t=12.64$ , $p<0.001$ )				Not statistically significant ( $t=0.25$ , $p>0.05$ )	
Statistical significance of differences between group	The difference between the attitudes scores of the Lampang intervention group and Nonthaburi control group in the first post-test was statistically significant ( $t=6.95$ , $p<0.001$ ).					

Table 4.4: Knowledge and Attitudes at Baseline and the First Post-test

#### Knowledge Scores at Baseline and the First Post-test within Groups

The mean scores of knowledge for the Lampang intervention group in the first post-test (Mean=20.0, sd=2.09) were higher than the baseline (Mean=14.32, sd=2.44).

This difference was statistically significant ( $t= 20.59$ ,  $p<0.001$ ).

Similarly, the mean scores of knowledge for the Nonthaburi control group in the first post-test (Mean=15.12, sd=2.78) were higher than the baseline (Mean=14.66, sd=2.55). However, this difference was not statistically significant ( $t=1.35$ ,  $p>0.05$ ).

#### Attitudes Scores at Baseline and the First Post-test within Groups

Moving on to attitudes scores, the mean scores for the Lampang intervention group in the first post-test (Mean=122.45, sd=6.40) were higher than the baseline (Mean=108.71, sd=6.83). There was a large, statistically significant difference between the first post-test and the baseline ( $t=12.64$ ,  $p<0.001$ ).

The mean scores of attitudes for the Nonthaburi control group in the first post-test (Mean=112.98, sd=10.95) were also found to be higher than the baseline (Mean=112.62, sd=9.20). However, this difference was not statistically significant ( $t=0.25$ ,  $p>0.05$ ).

### Knowledge Scores at Baseline and the First Post-test between Groups

Generally, knowledge scores in the first post-test for the Lampang intervention group (Mean=20.0,  $sd=2.09$ ) were higher than those for the Nonthaburi control group (Mean=15.12,  $sd=2.78$ ). This difference was statistically significant ( $t=12.05$ ,  $p<0.001$ ).

### Attitudes Scores at Baseline and the First Post-test between Groups

Attitudes scores in the first post-test for the Lampang intervention group (Mean=122.45,  $sd=6.40$ ) were higher than those for the Nonthaburi control group (Mean=112.98,  $sd=10.95$ ). This difference was statistically significant ( $t=6.95$ ,  $p<0.001$ )

### 4.3.3 Knowledge and Attitudes at Baseline and the Second Post-test

The comparison of the difference in the mean score of knowledge and attitudes between the second post-test and baseline within the groups used a paired samples t-test; for comparison between groups, an independent sample t-test was used.

Table 4.5 describes the longer-term changes in attitudes and knowledge that may have happened between the pre-test and the second post-test. This answers some questions – was there a sustained effect? How big was any change? Was it statistically significant? See also Appendix 4.6.

Second post-test	Lampang Intervention (n=65)		Lampang Control (n=61)		Nonthaburi Control (n=77)	
	Baseline	Second post-test	Baseline	Second post-test	Baseline	Second post-test
Knowledge Mean and (sd)	14.32 (2.44)	20.38 (1.90)	16.28 (2.92)	15.69 (3.63)	14.90 (2.50)	14.82 (2.95)
Statistical significance of differences within group	Statistically significant (t=22.58, p<0.001)		Statistically significant (t=-2.02, p<0.05)		Not statistically significant (t=-0.18, p>0.05)	
Statistical significance of differences between group	The difference between the knowledge scores for the Lampang intervention group and Lampang control group was statistically significant (t=9.02, p<0.001). The difference between the knowledge scores for the Lampang intervention group and Nonthaburi control group was statistically significant (t=13.54, p<0.001).					
Attitudes Mean and (sd)	108.71 (6.83)	123.40 (6.38)	116.93 (8.75)	114.28 (9.19)	113.66 (8.98)	113.86 (10.29)
Statistical significance of differences within group	Statistically significant (t=12.22, p<0.001)		Statistically significant (t=-2.06, p<0.05)		Not statistically significant (t=0.13, p>0.05)	
Statistical significance of differences between group	The difference between the attitudes scores for the Lampang intervention group and Lampang control group was statistically significant (t=6.43, p<0.001) The difference between the attitudes scores for the Lampang intervention group and Nonthaburi control group was statistically significant (t=6.75, p<0.001)					

Table 4.5: Knowledge and Attitudes Scores in the Second Post-test

## Knowledge Scores at Baseline and the Second Post-test within Groups

The research found that the knowledge scores for the Lampang intervention group in the second post-test (Mean=20.38, sd=1.90) were higher than the baseline (Mean=14.32, sd=2.44). This difference was statistically significant (t=22.58, p<0.001).

The knowledge scores for the Lampang control group in the second post-test (Mean=15.69, sd=3.63) were slightly lower than the baseline (Mean=16.28, sd=2.92). This change was statistically significant (t=-2.02, p<0.05).

With the Nonthaburi control group, it transpired that the knowledge scores in the second post-test (Mean=14.82, sd=2.95) were a little higher than the baseline (Mean=14.90, sd=2.50) but there was no statistically significant mean difference (t=-0.18, p>0.05).

### Attitudes Scores at Baseline and the Second Post-test within Groups

In terms of attitudes, the scores for the Lampang intervention group in the second post-test (Mean=123.40,  $sd=6.38$ ) were higher than the baseline (Mean=108.71,  $sd=6.83$ ). This difference was statistically significant ( $t=12.22$ ,  $p<0.001$ ).

Attitudes scores for the Lampang control group in the second post-test (Mean=114.28,  $sd=9.19$ ) were lower than the baseline (Mean=116.93,  $sd=8.75$ ). This difference was statistically significant ( $t=-2.06$ ,  $p<0.05$ ).

Attitudes scores for the Nonthaburi control group in the second post-test (Mean=113.86,  $sd=10.29$ ) were a little higher than the baseline (Mean=113.66,  $sd=8.98$ ). This difference was not statistically significant ( $t=0.13$ ,  $p>0.05$ ).

### Differences in Knowledge Scores in the Second Post-test between Groups

Independent sample t-tests were used to compare the difference in the mean scores of knowledge between groups at the second post-test, first between the Lampang intervention group and the Lampang control group, and secondly between the Lampang intervention group and Nonthaburi control group. See Table 4.5 and Appendix 4.7.

It was found that the scores of knowledge in the second post-test for the Lampang intervention group (Mean=20.38,  $sd=1.90$ ) were higher than those for the Lampang control group (Mean=15.69,  $sd=3.63$ ). This represents a significant mean difference in knowledge scores in the second post-test ( $t=9.02$ ,  $p<0.001$ ). Similarly, the mean scores from the Lampang intervention group (Mean=20.38,  $sd=1.90$ ) were found to be higher than those for the Nonthaburi control group (Mean=14.82,  $sd=2.95$ ). This is also a statistically significant difference ( $t=13.54$ ,  $p<0.001$ ).

### Differences in Attitudes Scores in the Second Post-test between Groups

**A student's independent sample t-test** was used to assess the statistical significance of differences in attitudes scores between groups. Attitudes scores in the second post-test for the Lampang intervention group (Mean=123.40,  $sd=6.38$ ) were higher than those for the Lampang control group (Mean=114.28,  $sd=9.19$ ). This difference was statistically significant ( $t=6.43$ ,  $p<0.001$ ).

The Lampang intervention group (Mean=123.40,  $sd=6.38$ ) also had a higher mean attitudes score than the Nonthaburi control group (Mean=113.86,  $sd=10.29$ ). This difference was statistically significant ( $t=6.75$ ,  $p<0.001$ ).

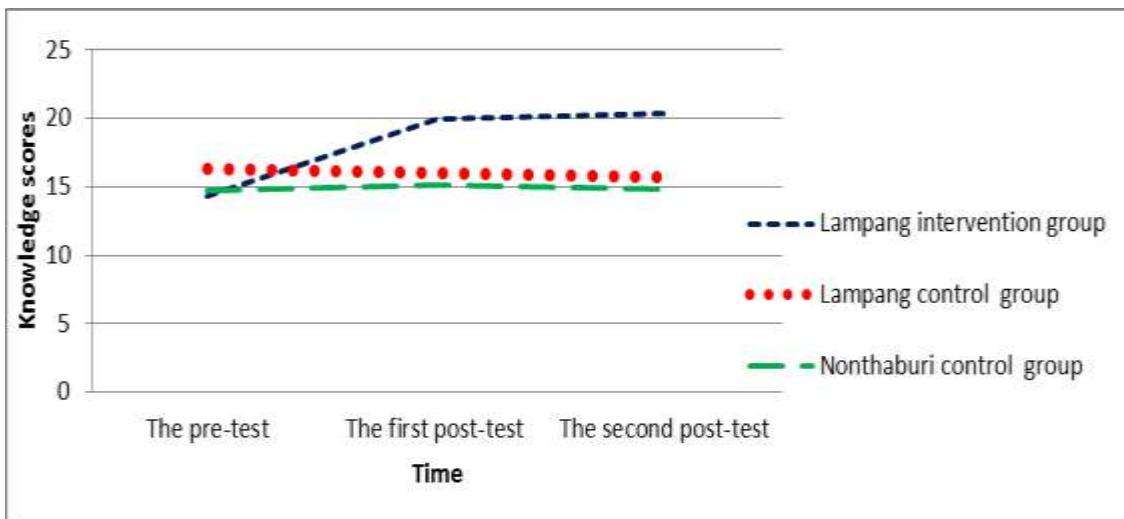


Figure 4.3: Comparison of the Mean Knowledge Scores in the Three Groups over Three Points in Time

Figure 4.3 shows the mean knowledge score at the three points in time. In the pre-test, the mean knowledge score for the Lampang control group was higher than those for the Lampang intervention group and Nonthaburi control group. In the first post-test, the mean knowledge score for the Lampang intervention group increased dramatically, rising higher than that for the Nonthaburi control group. In the second post-test, the mean knowledge score for the Lampang intervention group was still higher than the scores for both the Nonthaburi control group and Lampang control group. As reported above, in both the first and second post-test, the mean knowledge score of nursery workers in the Lampang intervention group (who had received the MMTP training) was significantly higher than that of nursery workers in the Nonthaburi control group (who **had** attended the official training) and the Lampang control group (who had received no training at all).

The attitudes scores tell a similar story.

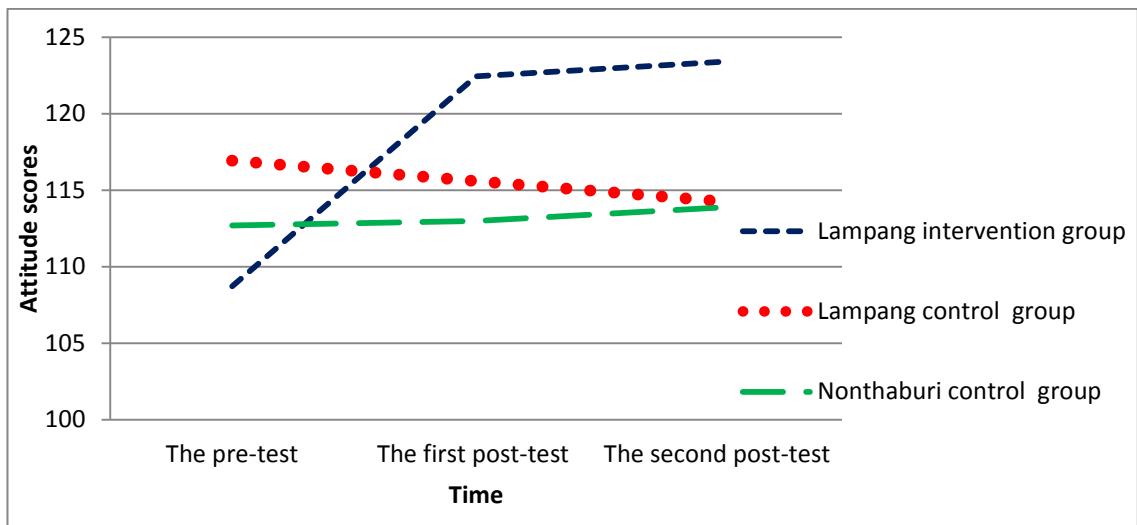


Figure 4.4: Comparison of the Mean Attitudes Scores in the Three Groups over Three Points in Time

Figure 4.4 shows the mean attitudes score at the three points in time. In the pre-test, the mean attitudes score for the Lampang control group was higher than those for the Lampang intervention group and Nonthaburi control group. In the first post-test, the mean attitudes score for the Lampang intervention group increased dramatically, rising higher than that for the Nonthaburi control group. In the second post-test, the mean attitudes score for the Lampang intervention group was still higher than the scores for the Nonthaburi control group and Lampang control group. As reported above, in both the first and second post-tests, the mean attitudes score of nursery workers in the Lampang intervention group was significantly higher than that of nursery workers in the Nonthaburi control group and the Lampang control group.

In conclusion, this finding indicates that the MMTP was effective in enhancing knowledge and attitudes pertinent to the importance of play and the play environment in Thai nursery workers.

#### 4.4 Part 4: The Relationship between Variables

This part will describe the relationship between variables that may affect the response to the training, as seen in the change in knowledge and attitudes scores (scores from the first post-test minus those from the pre-test). This includes potential covariates such as age, education level, years of work experience and number of children per nursery worker. The effect of initial knowledge and attitudes as assessed in the pre-test is also considered under this heading. Table 4.6 summarises the effect of covariates on change immediately after training (the first post-test) and Table 4.7 summarises the effect of covariates on change observed four weeks after training (the

second post-test). The Analysis of Covariance was used for this process, as it allows comparisons to be made between groups while adjusting for the effect of one or more covariate. In these analyses, the outcome measure was change in knowledge or attitudes between the baseline and either the first or second post-test. Separate analyses were also carried out that included no covariates or one or more of the covariates listed above.

#### 4.4.1 The Effect of Covariates on Change as Observed Immediately after Training (the First Post-test)

Table 4.6 shows the comparison of the change in both knowledge and attitudes scores between the Lampang intervention group and Nonthaburi control group (the first post-test minus the pre-test) using the independent sample t-test (see Appendix 4.8).

##### Knowledge Scores at Baseline and the First Post-test between Groups

Generally, the mean of the change in knowledge scores in the first post-test for the Lampang intervention group (Mean=5.68,  $sd=2.22$ ) was higher than that for the Nonthaburi control group (Mean=0.46,  $sd=3.37$ ). This difference was statistically significant ( $t=11.91$ ,  $p<0.001$ ).

##### Attitudes Scores at Baseline and the First Post-test between Groups

In terms of attitudes, the mean of the change in scores in the first post-test for the Lampang intervention group (Mean=13.74,  $sd=8.76$ ) was higher than that for the Nonthaburi control group (Mean=0.36,  $sd=14.36$ ). This difference was statistically significant ( $t=7.38$ ,  $p<0.001$ ).

A series analysis of covariance (ANCOVA) was used to compare the mean of the change in scores for knowledge and attitudes between the Lampang intervention group and Nonthaburi control group in the first post-test versus the pre-test, using age, education level, years of work experience and number of children per nursery worker as covariates (see Appendix 4.9). The results showed that none of the covariates had any impact on the outcome. There was no statistically significant difference ( $p>0.05$ ), as shown by Table 4.6.

Table 4.6 describes the change in knowledge and attitudes between the baseline and the first post-test plus the effect of covariates.

	Lampang Intervention	Lampang Control	Nonthaburi Control
Change in knowledge Mean and (sd) of change	5.68 (2.22)	Not assessed	0.46 (3.37)
Statistical significance of difference in change in scores between groups	The change in knowledge score between the pre-test and first post-test for the Lampang intervention group versus the Nonthaburi control group was statistically significant ( $t=11.91$ , $p<0.001$ ).		
Statistical significance of covariates (see Appendix 4.9)	<ul style="list-style-type: none"> <li>- Age was not statistically significant to the change between groups (<math>F(1,155)=0.38</math>, <math>p&gt;0.05</math>).</li> <li>- Education level was not statistically significant to the change between groups (<math>F(1,155)=0.04</math>, <math>p&gt;0.05</math>).</li> <li>- Number of years of work experience was not statistically significant to the change between groups (<math>F(1,155)=1.02</math>, <math>p&gt;0.05</math>).</li> <li>- Number of children per nursery worker was not statistically significant to the change between groups (<math>F(1,155)=0.01</math>, <math>p&gt;0.05</math>).</li> </ul>		
Change in attitudes Mean and (sd) of change	13.74 (8.76)	Not assessed	0.36 (14.36)
Statistical significance of difference in change in scores between groups	The change in attitudes score between the pre-test and first post-test for the Lampang intervention group versus the Nonthaburi control group was statistically significant ( $t=7.38$ , $p<0.001$ ).		
Statistical significance of covariates (see Appendix 4.9)	<ul style="list-style-type: none"> <li>- Age was not statistically significant to the change between groups (<math>F(1,155)=0.03</math>, <math>p&gt;0.05</math>).</li> <li>- Education level was not statistically significant to the change between groups (<math>F(1,155)=0.37</math>, <math>p&gt;0.05</math>).</li> <li>- Number of years of work experience was not statistically significant to the change between groups (<math>F(1,155)=0.06</math>, <math>p&gt;0.05</math>).</li> <li>- Number of children per nursery worker was not statistically significant to the change between groups (<math>F(1,155)=0.01</math>, <math>p&gt;0.05</math>).</li> </ul>		

Table 4.6: Change in Knowledge and Attitudes between Baseline and First Post-test plus Effect of Covariates

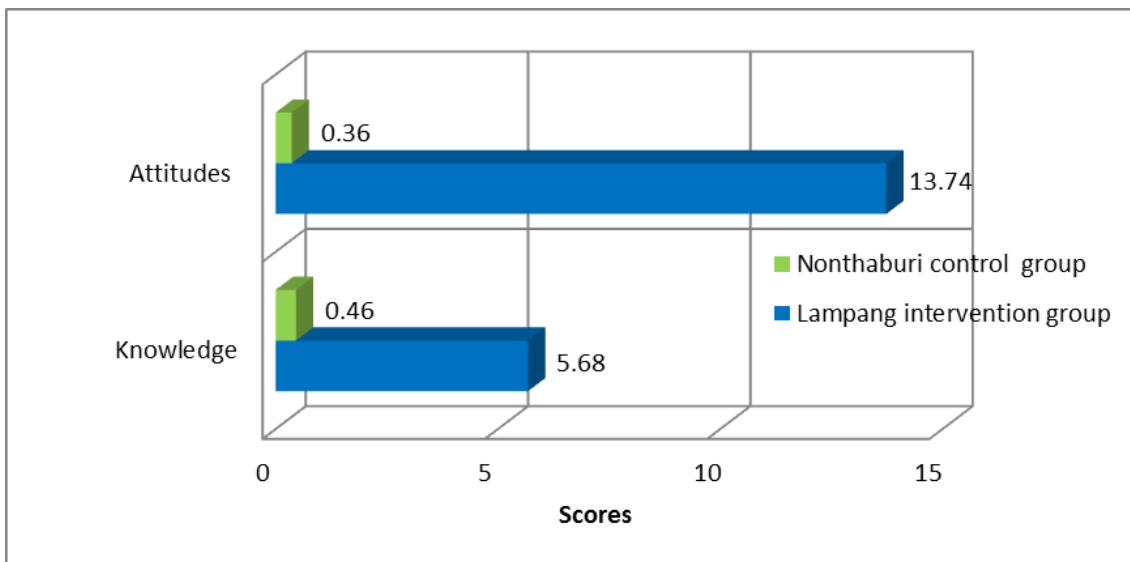


Figure 4.5: Change in Knowledge and Attitudes between the Baseline and First Post-test

Figure 4.5 presents the comparison of the change in knowledge and attitudes between the baseline and first post-test between the Lampang intervention and Nonthaburi control groups.

The change in attitudes scores in the first post-test for the Lampang intervention group (Mean=13.74,  $sd=8.76$ ) was significantly higher than that for the Nonthaburi control group (Mean=0.36,  $sd=14.36$ ).

The change in knowledge scores in the first post-test for the Lampang intervention group (Mean=5.68,  $sd=2.22$ ) was significantly higher than that for the Nonthaburi control group (Mean=0.46,  $sd=3.37$ ).

#### 4.4.2 The Effect of Covariates on Change as Observed Four Weeks after Training (the Second Post-test)

Table 4.7 shows the comparison between the change in knowledge and attitudes scores (the second post-test score minus the pre-test score) for two pairs - the Lampang intervention group versus the Lampang control group and the Lampang intervention group versus the Nonthaburi control group - using the independent sample t-test (see Appendix 4.10).

Table 4.7 describes the change in knowledge and attitudes between the baseline and the second post-test, plus the effect of covariates.

	Lampang Intervention	Lampang Control	Nonthaburi Control
Change in knowledge Mean and (sd) of change	6.06 (2.16)	-0.59 (2.28)	-0.08 (3.86)
Statistical significance of difference in change in scores between groups (see Appendix 4.10)	<p>The change in knowledge score between the pre-test and second post-test in the Lampang intervention group versus the Lampang control group was statistically significant (<math>t=16.79</math>, <math>p&lt;0.001</math>).</p> <p>The change in knowledge score between the pre-test and second post-test in the Lampang intervention group versus the Nonthaburi control group was statistically significant (<math>t=11.93</math>, <math>p&lt;0.001</math>).</p>		
Statistical significance of covariates (see Appendix 4.11)	<ul style="list-style-type: none"> <li>- Age was not statistically significant to the change between groups (<math>F(1,193)=0.72</math>, <math>p&gt;0.05</math>).</li> <li>- Education level was not statistically significant to the change between groups (<math>F(1,193)=0.07</math>, <math>p&gt;0.05</math>).</li> <li>- Number of years of work experience was not statistically significant to the change between groups (<math>F(1,193)=1.65</math>, <math>p&gt;0.05</math>).</li> <li>- Number of children per nursery worker was not statistically significant to the change between groups (<math>F(1,193)=0.07</math>, <math>p&gt;0.05</math>).</li> </ul>		
Change in attitudes Mean and (sd) of change	14.69 (9.69)	-2.66 (10.09)	0.19 (12.93)
Statistical significance of difference in change in scores between groups (see Appendix 4.10)	<p>The change in attitudes score between the pre-test and second post-test in the Lampang intervention group versus the Lampang control group was statistically significant (<math>t=9.85</math>, <math>p&lt;0.001</math>).</p> <p>The change in attitudes score between the pre-test and second post-test in the Lampang intervention group versus the Nonthaburi control group was statistically significant (<math>t=7.63</math>, <math>p&lt;0.001</math>).</p>		
Statistical significance of covariates (see Appendix 4.11)	<ul style="list-style-type: none"> <li>- Age was not statistically significant to the change between groups (<math>F(1,193)=1.02</math>, <math>p&gt;0.05</math>).</li> <li>- Education level was statistically significant to the change between groups (<math>F(1,193)=4.37</math>, <math>p&lt;0.05</math>).</li> <li>- Number of years of work experience was not statistically significant to the change between groups (<math>F(1,193)=0.12</math>, <math>p&gt;0.05</math>).</li> <li>- Number of children per nursery worker was not statistically significant to the change between groups (<math>F(1,193)=0.00</math>, <math>p&gt;0.05</math>).</li> </ul>		

Table 4.7: Change in Knowledge and Attitudes between Baseline and Second Post-test plus Effect of Covariates

### Knowledge Scores at Baseline and the Second Post-test between Groups

The mean of the change in knowledge scores in the second post-test for the Lampang intervention group (Mean=6.06,  $sd=2.16$ ) was higher than that for the Lampang control group (Mean=−0.59,  $sd=2.28$ ). This difference was statistically significant ( $t=16.79$ ,  $p<0.001$ ).

The mean of the change in knowledge scores in the second post-test for the Lampang intervention group (Mean=6.06,  $sd=2.16$ ) was higher than that for the Nonthaburi control group (Mean=−0.08,  $sd=3.86$ ). This difference was statistically significant ( $t=11.93$ ,  $p<0.001$ ).

### Attitudes Scores at Baseline and the Second Post-test between Groups

The mean of the change in attitudes scores in the second post-test for the Lampang intervention group (Mean=14.69,  $sd=9.69$ ) was, on average, higher than that for the Lampang control group (Mean=−2.66,  $sd=10.09$ ). This difference was statistically significant ( $t=9.85$ ,  $p<0.001$ ).

The mean of the change in attitudes scores in the second post-test for the Lampang intervention group (Mean=14.69,  $sd=9.69$ ) was higher than that for the Nonthaburi control group (Mean=0.19,  $sd=12.93$ ). This difference was statistically significant ( $t=7.63$ ,  $p<0.001$ ).

The analysis of covariance (ANCOVA) was used to compare the mean of the change in knowledge and attitudes scores among the three sample groups - the Lampang intervention, the Lampang control group and the Nonthaburi control group - in the second post-test versus the pre-test, using age, education level, years of work experience and number of children per nursery worker as covariates (see Appendix 4.11).

The results showed that none of these covariates affected the mean of the change in knowledge scores among the three sample groups ( $p>0.05$ ). Education level was the only covariate that affected the mean of the change in attitudes scores among the three groups in the second post-test ( $F (1,193)=4.37$ ,  $p=0.038$ ). The other covariates did not have any effect on changes in attitudes ( $p>0.05$ ), as shown in Table 4.7.

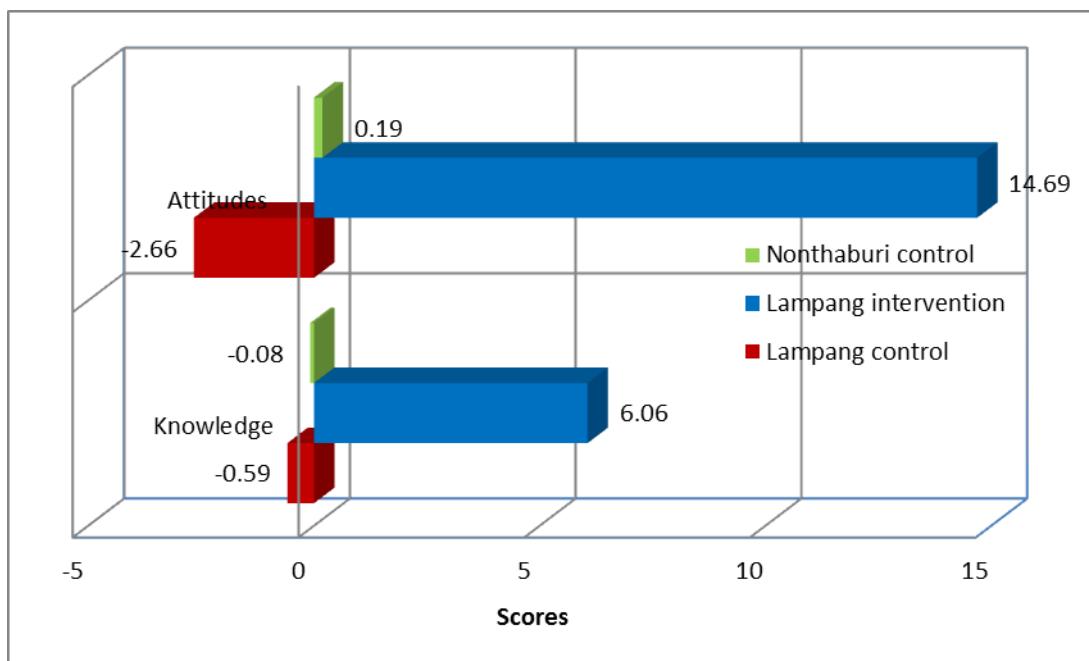


Figure 4.6: Change in Knowledge and Attitudes between the Baseline and Second Post-test

Figure 4.6 shows the comparison of the change in knowledge and attitudes between the baseline and second post-test among the three sample groups.

The change in attitudes scores between the baseline and second post-test for the Lampang intervention group (Mean=14.69,  $sd=9.69$ ) was significantly higher than those for both the Nonthaburi control group (Mean=0.19,  $sd=12.93$ ) and Lampang control group (Mean=-2.66,  $sd=10.09$ ).

The change in knowledge scores between the baseline and second post-test for the Lampang intervention group (Mean=6.06,  $sd=2.16$ ) was significantly higher than those for both the Nonthaburi control group (Mean=-0.08,  $sd=3.86$ ) and Lampang control group (Mean=-0.59,  $sd=2.28$ ).

#### 4.4.3 The Relationship between Knowledge and Attitudes

Table 4.8 presents the correlation between knowledge and attitudes in the three groups at the three points in time.

Pearson correlation analysis was used to examine the relationship between knowledge and attitudes in all three tests. The results (see Table 4.8) show a significant positive correlation between knowledge and attitudes scores at the pre-test ( $r=0.235$ ,  $p<0.001$ ), first post-test ( $r=0.497$ ,  $p<0.001$ ) and second post-test ( $r=0.371$ ,  $p<0.001$ ).

Knowledge and Attitudes Scores	Pearson Correlation Coefficient	p-value
Pre-test	0.235*	<0.001
First post-test	0.497*	<0.001
Second post-test	0.371*	<0.001

\* Correlation significance at  $p<0.001$

Table 4.8: Correlation between Knowledge and Attitudes in the Three Groups at Three Points in Time

#### 4.5 Part 5: Results of the Semi-Structured Interviews

This part will present the results of the semi-structured interviews with eight nursery workers from the Lampang intervention group; the two participants from each subgroup with the highest differences between their pre- and second post-test knowledge scores were the ones selected for interview.

The purpose of the semi-structured interviews was to further explore and expand on the quantitative results. The outcomes allowed this researcher to further understand **the nursery workers' views about the play environment after they had** used what they learnt from the MMTP training in their own work. Another purpose was to enhance the quantitative findings, which could be determined to confirm or disconfirm the hypothesised impact of the intervention.

Moreover, the researcher explored the facilitators and barriers that nursery workers had encountered when applying the MMTP to their work. The results of the analysis were consolidated in order to find solutions to these problems and make suitable adjustments to the MMTP training for its further development.

These semi-structured interviews were conducted using the six-question guide (see Table 3.20 in Chapter 3). As discussed in Chapter 3 Section 3.7.5, the findings from

the interviews are divided into four areas: demographic data of the participants, lessons learnt from the MMTP, application of the MMTP and solutions to barriers after training.

#### 4.5.1 Characteristics/Demographic Data of the Participants in the Semi-Structured Interviews

The interviewees were eight nursery workers from different childcare centres in Muang Lampang, Lampang province (see Table 4.9). They were aged from 30 to 50, and had **all completed a bachelor's degree in Early Childhood Education. They had worked in** childcare centres for between three and 34 years. One of them was divorced, and the remainder were married. Four were the heads of their childcare centres. There were three that worked alone in their childcare centres. The nursery worker:child ratio was 1:12-21. Children ranged in age from eighteen months to five years.

Characteristics of participants	Top Two Highest Difference in Scores from Four Subgroups							
	SG1A	SG1B	SG2A	SG2B	SG3A	SG3B	SG4A	SU4B
Age	43	30	40	41	50	42	36	44
Bachelor level	Education in Early Childhood Education	Education in Early Childhood Education	Education in Early Childhood Education	Education in Early Childhood Education	Education in Early Childhood Education	Education in Early Childhood Education	Education in Early Childhood Education	Education in Early Childhood Education
Years of work experience	7	3	20	18	34	14	15	20
Status	Married	Married	Married	Married	Married	Divorced	Married	Married
Number of nursery workers	3(*)	1	1	6(*)	5(*)	3	1	2(*)
Number of children	56	21	21	70	75	40	15	24
Nursery worker:child ratio	1:19	1:21	1:21	1:12	1:15	1:12-13	1:18	1:12
Children's age	2-4.11	1.10-3.6	2-4.2	1-3.2	1.11-3.2	1.10-4.3	2-5	1.6-4
Number of classroom	2 (classified by age)	1	1	3 (classified by age)	3 (classified by age)	3 (classified by age)	1	1

Notes: SG1A = Nursery workers who had the 1<sup>st</sup> highest different scores from subgroup 1

SG1B = Nursery workers who had the 2<sup>nd</sup> highest different scores from subgroup 1

(\*) = Head of childcare centre

Table 4.9: Demographic Data of the Eight Participants

Eight participants were recruited for interview in order to understand and explore **nursery workers' views about the play environment after the MMTP training; six open-ended questions were used**. Interview excerpts are illustrated in quotations, presented in text with corresponding nursery worker numbers in brackets.

Table 4.10 shows the results of the semi-structured interviews relating to the MMTP training implementation; the responses to the questions are structured into three categories.

Main Categories	Question
1. Lessons learnt from participating in the MMTP training	Question 1: What did you learn from the training? Question 2: What were the most useful things you learnt?
2. Application of the MMTP after training	Question 3: Have you used workshop 1-7 (from training day)? Question 4: Has the training changed the way you worked? Question 5: How has the training affected the children?
3. Barriers to using the MMTP and their solutions	Question 6: Did you have any problems using what you learnt on the training day?

Table 4.10: Names of Main Categories and Questions

#### 4.5.2 Lessons Learnt from Participating in the MMTP Training

From the transcripts of questions 1-2, three main points of view were identified with regard to learning from the MMTP training (see Table 4.11).

Main area	Lessons learnt from participating in the MMTP training				
Categories	Gaining new knowledge		Gaining positive experience	Attitudes towards the MMTP training	
Subcategories	The importance of play and the play environment	Promoting child development through play	Roles of nursery workers and their association with play and children		
Participant Response	<ul style="list-style-type: none"> <li>- To gain knowledge of activities for children through play</li> <li>- To develop children's learning through play with a systematic process</li> <li>- To arrange suitable environments for children to play indoors and outdoors</li> <li>- To provide a wide range of play activities for children</li> <li>- To obtain new techniques for creating activities for children through play</li> <li>- To promote play, child development and the play environment</li> <li>- To develop learning methods in children through proper play</li> <li>- To provide play corners in the childcare centre</li> </ul>	<ul style="list-style-type: none"> <li>- To learn how to create simple play equipment</li> <li>- To gain more ideas and experience of how to provide sensory learning to children</li> <li>- To know how to support four aspects of child development: physical, emotional, social and intelligent</li> <li>- To gain more ideas about setting up play corners in the childcare centre</li> <li>- To use learning through play in the childcare centre</li> <li>- To create and design various activities from limited materials</li> <li>- To gain social skills</li> <li>- To understand the concept of working together as a group, leadership and followership</li> <li>- To gain ideas from</li> </ul>	<ul style="list-style-type: none"> <li>- To make dough</li> <li>- To play with children by using a story bag</li> <li>- To realise that teachers need to have certain knowledge in order to help children develop through play</li> <li>- To set up an environment for children to play and use proper toys</li> <li>- To gain knowledge of play activities which support positive behaviour and reduce negative behaviour</li> <li>- To encourage <b>children's confidence</b></li> <li>- To understand the importance of play</li> <li>- To gain more knowledge of how children reflect their feelings through plays and activities</li> <li>- To appreciate that skill is when one</li> </ul>	<ul style="list-style-type: none"> <li>- To work and play with others in a small group</li> <li>- To present and share learning experiences in groups</li> <li>- To gain more knowledge from friends via discussions</li> <li>- To share ideas and learning with peers and trainers</li> <li>- To cooperate and participate in small groups</li> <li>- To be united when playing together</li> <li>- To understand brainstorming</li> <li>- To integrate and connect with one another in small group environments</li> <li>- To learn how to make a story using objects</li> <li>- To gain self-confidence</li> </ul>	<ul style="list-style-type: none"> <li>- Trainer was friendly</li> <li>- Trainer was able to explain contents and made them easy to understand</li> <li>- Trainer was well-spoken and communicated clearly</li> <li>- Participants enjoyed activities and workshops provided</li> <li>- Participants were able to apply the lessons learnt and use them in their own care centres</li> <li>- Participants appreciated the atmosphere of workshops and activities</li> <li>- There were not too many participants in one workshop</li> <li>- The training was found to be very useful</li> </ul>

Main area	Lessons learnt from participating in the MMTP training				
Categories	Gaining new knowledge		Gaining positive experience	Attitudes towards the MMTP training	
Subcategories	The importance of play and the play environment	Promoting child development through play	Roles of nursery workers and their association with play and children		
	<ul style="list-style-type: none"> <li>- To understand types and steps of play</li> <li>- To provide a proper environment for play and encourage seven aspects of child development</li> <li>- To gain a better overview of the importance of play</li> <li>- To realise that it is very important for children</li> <li>- To arrange proper environments for children according to their needs and behaviour</li> <li>- To choose appropriate toys for <b>children's ages</b></li> </ul>	<ul style="list-style-type: none"> <li>- group activities and unitising in daily work</li> <li>- To learn how to work with others in a small group</li> <li>- To integrate knowledge of play and child development in each activity</li> <li>- To realise the meanings, importance and benefit of play and how to choose suitable toys for <b>children's age and development</b></li> <li>- To appreciate that <b>children's</b> development through play is easy</li> <li>- To apply techniques for further developing play and child activity</li> <li>- <b>To promote children's</b> learning development in the early stage in seven aspects: emotional, social,</li> </ul>	<ul style="list-style-type: none"> <li>- learns things efficiently and is able to use them in daily life</li> <li>- To be able to gain and exchange new knowledge with other professionals</li> <li>- To gain knowledge and training outside the classroom</li> <li>- To learn and apply new techniques through play when taking care of children</li> <li>- To comprehend <b>children's</b> development though play and the importance of <b>teachers' roles: when</b> to support, encourage and compliment children</li> <li>- To deal with displeased and difficult children</li> <li>- To communicate and</li> </ul>	<ul style="list-style-type: none"> <li>- To make new friends and learn from one another</li> <li>- To work together in order to complete a task</li> <li>- To communicate and listen to others</li> <li>- To gain social skills</li> <li>- To play a newspaper dance game</li> <li>- To experience role playing</li> <li>- To play with a story bag</li> <li>- To make a continuous story in a short time</li> </ul>	

Main area	Lessons learnt from participating in the MMTP training			
Categories	Gaining new knowledge		Gaining positive experience	Attitudes towards the MMTP training
Subcategories	The importance of play and the play environment	Promoting child development through play	Roles of nursery workers and their association with play and children	
		language, intellectual, confidence, imagination and physical	set rules with children <ul style="list-style-type: none"> <li>- To choose media/materials and benefit from each type of media</li> <li>- To have more ideas about creating toys from natural material</li> </ul>	

Table 4.11: Lessons Learnt from Participating in the MMTP Training

### 4.5.3 Application of the MMTP after Training

#### 4.5.3.1 Utilising Knowledge Gained from the MMTP Workshops

During the MMTP one-day training, this researcher organised seven workshops in order to demonstrate group dynamics and reflect on how nursery workers felt about playing with multimedia toys. The interviews with the workers, held six weeks after training, included questions about how they had applied these workshops to their settings. The following interview excerpts provide examples of this application.

##### Workshop 1. Role play and small worlds construction

All participants were using role play and small worlds construction in their childcare centres.

*'I have rearranged one corner as a small world. I put down old kitchenware that is not in use and has been cleaned. This corner can be used for recycled toys; I learnt to provide these for children from the training.'* [Thuan, Head of childcare centre]

##### Workshop 2. Book corners

Two of the participants did not put all the books out, but instead planned to use them only during storytelling time.

*'Children fight for the books; I don't want the books to be damaged. Hence I put them on top of the shelf. They will be brought down again the next time I need them.'* [Gou, nursery worker]

##### Workshop 3. Outdoor play and music

One of the participants was unable to allow children to play outdoors as the environment was not safe. However, an instrument was provided for children to play music in the classroom instead.

*'The place is close to the rice farm. I am afraid that bugs may harm the children.'* [Nai, nursery worker]

##### Workshop 4. Play dough

One of the participants only used the materials provided by this researcher once after the training. She decided to use plasticine in future, as it is easier and cheaper to keep than the materials provided.

Six out of the eight nursery workers did not use play dough due to its high cost. Play dough is easier to mould than plasticine. However, it is not always practical due to its high price.

***'The materials are too expensive, hence we use plasticine instead.'*** [Kair, Head of childcare centre]

One participant bought the material herself but it did not work well with the children in her group, as there was a large age range including very young children (aged 1.8 to three years old). It was relatively hard for her to take control of her group and she had to clean them after play. She had to do everything by herself in her setting.

#### Workshop 5. Painting, gluing, collage and drawing

All participants used this activity two or three times per week because it did not require too much interaction between children and nursery workers. It was, however, necessary to prepare material to ensure that there were no accidents.

***'It is not possible to perform this activity with only one child.'*** [Khwan, Head of childcare centre]

#### Workshop 6. Play with natural materials

All participants let children play with natural materials so long as they thought they could supervise them and prevent accidents.

***'I fear that it would harm children.'*** [Pen, nursery worker]

#### Workshop 7. A story bag

Three participants used a story bag to play with children, but only sometimes, as they did not have much time. Children normally asked to play with a story bag, and sometimes nursery workers encouraged them to play. Activities were relatively flexible depending on children's interest.

***'I don't use it very often as I don't have time.'*** [Noi, nursery worker]

#### 4.5.3.2 Changing the Way Nursery Workers Work

All eight participants reported that the MMTP had changed the way they worked. However, the details of how this change occurred were different. For example:

***'I arranged a play corner for children and adjusted existing toys according to the local wisdom of forefathers, using "Sufficient Economy Theory" (self-sufficiency) to make toys for children.'*** [Thuan, Head of childcare centre]

*'I adapted techniques from the seven workshops from the training day to play with children in the childcare centre, and found that they could be used with children of different ages and conditions.' [Mai, nursery worker]*

*'I selected and created toys and learning media by applying recycled materials.' [Noi, nursery worker]*

*'I selected learning media from local areas and sometimes through donation.' [Pen, nursery worker]*

*'I was able to arrange as many learning activities as possible in order to create the chance for children to play through learning activities: for example, learning community through games.' [Khwan, Head of childcare centre]*

*'I invited elderly people to produce local toys for children in childcare centres. They were asked to tell folk stories to children and demonstrate how to cook simple desserts.' [Nai, nursery worker]*

*'I allocated space for playing which was suitable for child development, for example providing more natural play corners and home corners. I used natural toys which were non-specific and equipment that could only be used for one thing.' [Gou, nursery worker]*

*'I rearranged the classroom in the childcare centre to support more learning activities. I also arranged a play corner in the childcare centre and let children play freely. Moreover, I integrated playing, learning and activities in order to connect playing and teaching.' [Kair, Head of childcare centre]*

#### 4.5.3.3 Promoting Child Development

The findings from the interviews reflected four dimensions of child development: physical, emotion, social and cognitive. Before the actual training, this researcher believed that providing proper play would only stimulate children's physical, emotional, social and intelligence development. However, the research evidence showed that play actually encourages children's language development as well, as children respond to questions raised by their caretakers during play.

In addition, play was found to help children become more creative and imaginative. This type of development, however, is dependent on age. Children from different age groups respond to play differently, which impacts their progress in imagination. For example, younger children react to play more slowly than older ones, so they are not encouraged to be as imaginative as the older ones during play.

Another interesting point found was that children develop autonomy by exploring their environment and starting to do things for themselves. They learn to wait and share when there is not enough play equipment for everyone. They also develop an acceptance of playing with others and taking turns with equipment. The process of playing as a group encourages children to be responsible for the equipment. They clean up the play area and put the equipment back where it belongs.

#### 4.5.4 Barriers to Using the MMTP and Their Solutions

Main area	Barriers to using the MMTP					
Categories	People			Educational equipment is insufficient	Administration management	Environment
Subcategories	Nursery workers	Parents and community	Children			
Coding	<ul style="list-style-type: none"> <li>• Nursery workers like to create play materials, but have so much work to do they do not have enough time</li> <li>• Conflict between staff</li> <li>• Lack of nursery workers</li> <li>• Teaching plans are not realistic</li> </ul>	<ul style="list-style-type: none"> <li>• Parents send their unwell children to the childcare centre</li> <li>• Parents do not have a good understanding of rules, hence children are not disciplined</li> <li>• Parents do not cooperate</li> <li>• Parents never say '<b>No</b>' to children</li> <li>• Parents have overly high expectations of their children, e.g. forcing their child to learn a new language such as English when the child is not ready</li> </ul>	<ul style="list-style-type: none"> <li>• Each child pays attention to activities differently</li> <li>• Smaller or younger children do not want to participate in activities; their behaviour often impacts on the <b>older ones'</b> concentration</li> <li>• Some children have slow communication development</li> <li>• Some children find it hard to concentrate</li> <li>• Children are very shy</li> <li>• Children are from different age ranges; hence it is difficult for the</li> </ul>	<ul style="list-style-type: none"> <li>• Poor learning materials</li> <li>• Lack of material resources</li> <li>• Inadequate materials</li> <li>• No computers or printers</li> </ul>	<ul style="list-style-type: none"> <li>• Delayed communication from Sub-District Administrative Organisations (SAOs)</li> <li>• Bureaucracy in the SAOs</li> <li>• The SAOs do not provide enough toys</li> <li>• There is a policy that children can attend care centres anytime (no school terms); hence it is hard for caretakers to plan their teaching programmes</li> </ul> <p>Lack of supportive budget for maintenance, and repairing buildings and buying</p>	<ul style="list-style-type: none"> <li>• Children from all different age groups are together in one class</li> <li>• Lack of various and suitable space for outdoor play; the playground is hard and made from cement, and play equipment <b>isn't stable or</b> strong</li> <li>• Unsafe play environments which can be dangerous to children, for example unclean water ponds, steep mountains and overgrown forests where poisonous</li> </ul>

Main area	Barriers to using the MMTP					
Categories	People			Educational equipment is insufficient	Administration management	Environment
Subcategories	Nursery workers	Parents and community	Children			
			<p>caretaker to prepare their teaching programme</p> <ul style="list-style-type: none"> <li>• Children have family problems</li> <li>• Children do not want to participate in activities or play with other children</li> </ul>		materials	animals live

Table 4.12: Barriers to Using the MMTP

#### 4.5.4.1 Parents' Social and Cultural Conditions (Including Beliefs and Attitudes)

The interviews also highlighted some beliefs that parents held about their children's care, which had an effect on nursery workers' arrangement of play activities in childcare centres. For example:

'Children should only play with expensive equipment.' One parent left a special toy with their child when they arrived at the childcare centre. It resulted in all the children fighting over the toy.

Some children were not allowed to play in forests or near waterfalls because it was believed that spirits would make them ill, or were not allowed to play outdoors because of parents' beliefs:

'Children should not play outdoors during rainy season because they will be dirty and may get sick.'

'Children should not play outdoors in summer because it is too humid and sunny and they may get sick.'

#### 4.5.4.2 Child Advocacy as Solutions to Problems

All eight nursery participants stated that the play equipment in their centres was insufficient. Many shared similar problems, though some experienced issues differently. Interestingly, these nursery workers persisted in improving care conditions of the children **under their care despite difficulties. They said, 'I am doing this for these children'.** They were essentially child advocates who persisted in their course of action by creating new ways of implementing play activities and seeking support from within and outside childcare centres. Below are the common approaches taken by participants to solving the problem of having insufficient play equipment in the childcare centre:

- 1) Encouraging children to share their toys.
- 2) Creating play equipment from surrounding materials.
- 3) Encouraging children to play as a group.
- 4) Encouraging children from different age groups to play and look after each other as brothers and sisters.
- 5) **Encouraging children's parents to donate toys to the care centre.**
- 6) Buying new toys with their own money.

- 7) Reporting problems to SAOs.
- 8) Seeking funding from private organisations or the community.

## 4.6 Chapter Summary

This chapter has provided a summary of findings, aiming to evaluate the effectiveness of the multimedia teaching package (MMTP) in ascertaining the attitudes and knowledge of Thai nursery workers.

The data were analysed using Statistical Package for the Social Sciences (SPSS) version 19. Statistical significance was defined at the 5% level. Statistical analysis was performed by using frequency, percentage, mean and standard deviations, a chi-square test, a one way **analysis of variance (ANOVA)**, a **student's independent sample t-test** and a paired samples t-test and analysis of covariance (ANCOVA).

The results revealed that the nursery workers in the Lampang intervention group had a significant increase in their mean scores in knowledge and attitudes towards the play environment in the first and second post-test compared to the pre-test ( $p$ -value  $< .05$ ).

This group had far more significant differences in their mean scores of knowledge and attitudes in the first post-test than the Nonthaburi control group ( $p$ -value  $< .05$ ) and similarly, far more significant differences in the second post-test than either the Lampang or Nonthaburi control groups ( $p$ -value  $< .05$ ).

The overall knowledge and attitudes scores of the Lampang intervention group in the second post-test were significantly higher than the first post-test.

The results of the semi-structured interviews conducted with nursery workers from the Lampang intervention group show their views and feedback about the MMTP training proposed. The analysis has identified three main areas: lessons learnt from participating in the MMTP training, application of the MMTP after training and barriers and solutions related to use of the MMTP. Each main area was further divided into several categories and subcategories. Chapter 5 will provide a detailed discussion of the findings

# Chapter 5: Discussion

The main aim of this study was to design and evaluate a multimedia teaching package (MMTP) to enhance the knowledge and attitudes of Thai nursery workers relating to the importance of play and the play environment. This chapter will provide a detailed discussion of the findings presented in the previous chapter.

The chapter will begin with a summary of the demographic findings of this research, followed by observed changes in the knowledge and attitudes of the three sample groups (Lampang intervention group, Lampang control group and Nonthaburi control group). This will be followed by a discussion of which covariates were effective and statistically significant, along with the main findings from the qualitative analysis.

## 5.1 Summary of Demographic Findings

All 226 participants were female with an age range of 23-56 years old. **Nearly 70% of the participants had graduated with at least a bachelor's degree in Early Childhood Education (n=155).** This educational background shows that most of the participants had a basic knowledge of early childhood. As a result, the researcher did not discuss child development theories as part of the training and from content analysis results (section 3.4.7) introducing the concept of play and the play environments to the training programme.

Due to lack of current national data on nursery workers, it was not possible to determine whether the nursery workers in the present study represented the national nursery worker population. The most recent national data on nursery workers with detailed characteristics such as age and education were located in the research article by Sueluerm et al. (2008) and Chompikul et al. (2008).

Sueluerm et al. (2008)' **study collected data from a convenient sample of 145 nursery workers** from five provinces across the country in 2008. Chompikul et al. (2008) conducted a quick survey of 4,358 Thai nursery workers from 1,910 childcare centres in eight different provinces from all five regions of Thailand.

In term of age, this study appeared that the nursery workers were quite similar to those reported in 2008. That is, 51.77% of participants fall in the age range of 31 to 40 years of age. Chompikul et al. (2008)' **study found that** the median of the youngest age of nursery workers ranged from 28 to 33 years. The median of the oldest age of nursery workers ranged from 38 to 43. Sueluerm et al. (2008)' **study showed that the** 76.6% of the sample were younger than 40 years of age; whereas 71.7% of the present sample were 40 years or younger.

In term of educational background, nursery workers in this study had better education than the 2008's cohort. That is, 68.6% of the present sample had bachelor's degrees in early childhood education; whereas only 13.8% of the Sueluerm et al. (2008)'s sample did so. The Chompikul et al. (2008)' results showed that the most nursery workers had completed vocational and technical education (56%). In Nakhon Pathom and Trang province, the nursery workers who mainly held bachelor's degrees, respectively, were 45.9% and 41.4% of all nursery workers (Chompikul et al. 2008).

The difference in education level between the two nursery worker cohorts can be due to national policies and efforts in improving education of teachers working in early childhood education and care settings in Thailand. Such efforts have resulted in local organisations employing more nursery workers with early childhood education or supporting them to undertake early childhood education degree. With this regard, it might be reasonably safe to say that the educational profiles of the nursery workers in this study reflected the recent trend in nursery workers' education. Whether these profiles were representative of the national frame was beyond the available data, however.

All 266 participants were found to have worked in childcare centres for between eight and 13 years. As such, they would be able to apply what they learnt from the MMTP training package to their daily work and then provide valid feedback to this researcher during the semi-structured interviews.

The nursery worker:child ratio ranged from 1:14 to 1:18. The youngest children at the centres were 13-24 months old while the oldest were 37-48 months. These findings illustrate two main issues: 1) the number of children per nursery worker was high and 2) there was a wide age range among the children in each nursery, which meant that it was difficult for the nursery workers to encourage them to play as a group.

## 5.2 Observed Change in Knowledge and Attitudes of Nursery Workers

This section will present a summary of changes in the knowledge and attitudes of nursery workers observed by the researcher following the analysis of the qualitative and quantitative findings. The summary will be broken down into three parts, corresponding with the sample groups used for primary data collection.

### 5.2.1 Observed Change in Knowledge and Attitudes in the Lampang Intervention Group

Hypothesis 1: Nursery workers in the Lampang intervention group would have higher knowledge and attitudes scores pertinent to the importance of the play environment in the first and second post-tests than in the pre-test.

Findings from this research matched the hypothesis that nursery workers from this group would have higher knowledge scores in the first and second post-tests than in the pre-test. The results show a significant mean difference in knowledge scores between the baseline and first post-test for this group ( $t=20.59$ ,  $p<0.001$ ). It appears that after training, the participants displayed an immediate significant gain in knowledge of the subjects tested. This could constitute evidence that the MMTP was effective in promoting knowledge in this group.

Similarly, a significant mean difference was found in the knowledge scores for this group between the baseline and second post-test ( $t=22.58$ ,  $p<0.001$ ). Interestingly, the knowledge of play and the play environment had been retained and marginally improved at the second post-test (Mean=20.38,  $sd=1.90$ ) from the first post-test (Mean=20.00,  $sd=2.09$ ). This shows that the nursery workers were able to retain knowledge gained from the MMTP.

In terms of attitudes, a statistically significant mean difference was found in the attitudes scores between the baseline and first post-test for this group ( $t=12.64$ ,  $p<0.001$ ). The attitudes scores in the first post-test (Mean=122.45,  $sd=6.40$ ) were higher than the baseline (Mean=108.71,  $sd=6.83$ ). This provides evidence that the MMTP efficiently enhanced the attitudes of nursery workers towards the importance of play and the play environment.

There was also a significant mean difference in the attitudes scores between the baseline and second post-test for this group ( $t=12.22$ ,  $p<0.001$ ). In the second post-test, **the participants' attitudes towards play and the play environment increased** (Mean=123.40,  $sd=39$ ) from the baseline. This result demonstrates that the participants still held positive attitudes towards the subjects even a month after the training day.

### 5.2.2 Observed Difference in Knowledge and Attitudes between the Lampang Intervention Group and Nonthaburi Control Group

Hypothesis 2: Nursery workers in the Lampang intervention group would have a higher change in knowledge and attitudes scores than the Nonthaburi control group when assessed in the first post-test.

When comparing the knowledge and attitudes scores between these two groups, the findings matched Hypothesis 2. The change in knowledge scores in the first post-test for the Lampang intervention group (Mean=5.68,  $sd=2.22$ ) was significantly greater than that for the Nonthaburi control group (Mean=0.46,  $sd=3.37$ ). The interesting point was that the two groups had a very similar baseline score (Lampang intervention group: Mean=14.32, Nonthaburi control group: Mean=14.68). This could be explained by a similar level of background knowledge of play and the play environment. It could be argued that the MMTP was highly effective and had a positive impact on the participants who attended the programme. The findings prove that the current official training does not focus enough on play and play environments, leading to a big gap in the knowledge and attitudes of nursery workers towards play.

Similarly, the change in attitudes scores in the first post-test for the Lampang intervention group (Mean=13.74,  $sd=8.76$ ) was significantly greater than that for the Nonthaburi control group (Mean=0.36,  $sd=14.36$ ). It appears that the official training did not have any impact on the attitudes of the participants in the Nonthaburi control group towards play and the play environment. The attitudes of the participants in the Lampang intervention group, meanwhile, became dramatically more positive following the MMTP training. Again, this provides strong evidence that the MMTP had a positive impact on the attitudes of those who attended the training programme.

### 5.2.3 Observed Difference in Knowledge and Attitudes between the Three Sample Groups (Lampang Intervention, Lampang Control and Nonthaburi Control Groups)

Hypothesis 3: Nursery workers in the Lampang intervention group would have a greater change in scores in knowledge and attitudes pertinent to the importance of the play environment than those in the two control groups when assessed in the second post-test.

Similarly to the two previous hypotheses, the findings were in line with Hypothesis 3. Nursery workers in the Lampang intervention group were indeed found to have a

greater change in knowledge and attitudes scores in the second post-test than those in the two control groups.

When comparing the change in scores in attitudes and knowledge between the Lampang intervention group and Lampang control group, the findings revealed that the participants from the former had a significantly greater change in scores (knowledge Mean=6.06,  $sd=2.16$ , attitudes Mean=14.69,  $sd=9.69$ ) than the participants in the latter (knowledge Mean=-0.59,  $sd=2.28$ , attitudes Mean=-2.66,  $sd=10.09$ ). **It could be inferred that without suitable training in play, nursery workers'** knowledge and positive attitudes are more likely to decline. On the other hand, when appropriate training such as MMTP is provided, learners are more likely to retain the knowledge of play gained from the training, as well as improve their attitudes towards play.

The second comparison was conducted between the Lampang intervention group and Nonthaburi control group. The results demonstrated that participants in the former had a greater change in scores (knowledge Mean=6.06,  $sd=2.16$ , attitudes Mean=14.69,  $sd=9.69$ ) than participants in the latter (knowledge Mean=-0.08,  $sd=3.86$ , attitudes Mean=0.19,  $sd=12.93$ ). Even though training was provided to both groups, their scores in attitudes and knowledge changed differently. The Lampang intervention group, who attended the MMTP, showed a significant change in knowledge and attitudes. This means that the MMTP successfully enhanced nursery workers' knowledge and dramatically improved their attitudes towards play. However, the results were not so impressive for the Nonthaburi control group, who only received the official training programme.

### 5.3 Summary of the Effect of Covariates

For the two comparisons of change in mean scores of knowledge and attitudes, the four following covariates were used: 1) age, 2) years of work experience, 3) educational level and 4) nursery worker to child ratio. The first comparison shows the mean change in scores between the Lampang intervention group and Nonthaburi control group (the first post-test minus the pre-test). The second comparison refers to the mean change in scores between the three sample groups (for the second post-test minus the pre-test).

The findings from the first comparison revealed that none of the covariates had any impact on either variable (knowledge or attitudes). There was no statistically significant difference ( $p>0.05$ ) shown by any of the covariates.

The results from the second comparison demonstrated that educational level affected the change in attitudes scores among the three sample groups. Out of all the

covariates, it was this that made the most significant difference to change ( $F=4.37$ ,  $p>0.05$   $p<0.05$ ) in attitudes. However, even having adjusted for the effect of education as a covariate, the statistically significant differences between intervention and control groups (as discussed above) still remained.

As stated in Chapter 3 by Allport (1935 cited in Pickens 2011), attitudes refers to a **dynamic influence on an individual's response to all objects and situations with which** it is associated. This could relate to the findings here, as participants with an educational background in child development are more likely to be prepared for child behaviour. In addition, they tend to understand issues and problems that arise while taking care of children, more so than those who do not have the relevant education. As a result, participants with this relevant educational background would be better able to develop good attitudes towards children and play.

Interestingly, it was found that the rest of the covariates (age, years of work experience, and nursery worker:child ratio) did not have any impact on changes in attitudes. It may then be appropriate for future MMTP trainers to spend more time with trainees who do not have an educational background relating to child development. This would ensure that all participants have as similar a background knowledge as possible before starting the MMTP programme, which will eventually impact on their attitudes and how they view play.

Meanwhile, none of the covariates were found to impact on changes in knowledge. This strongly suggests that **demographic status had no effect on trainees' knowledge** of play and play environments. This means that future trainers would be able to accept participants for the MMTP programme regardless of their demographic background.

Another point that could be made here is that the MMTP was effective and practical. Hence, all participants from different demographic groups were able to learn easily from the programme and utilise their new knowledge in their day-to-day work in childcare centres.

## 5.4 The Relationship between Knowledge and Attitudes among the Three Groups

Following data collection, the knowledge and attitudes of the three sample groups were measured at three points in time: before training (the pre-test), immediately after training (the first post-test) and four weeks after training (the second post-test). The knowledge and attitudes scores of the three groups at the three points in time showed a significant positive correlation between knowledge and attitudes in the pre-test

( $r=0.235$ ,  $p<0.001$ ), first post-test ( $r=0.497$ ,  $p<0.001$ ) and second post-test ( $r=0.371$ ,  $p<0.001$ ) (see Table 4.8 page 170).

At the baseline, there was a significant positive correlation between knowledge and attitudes scores ( $r=0.235$ ,  $p<0.001$ ), indicating that nursery workers who were more knowledgeable about the importance of play and the play environment also had more positive attitudes towards play.

The findings also indicate a positive relationship between knowledge and attitudes at the first post-test ( $r=0.497$ ,  $p<0.001$ ). It could be inferred that increasing the knowledge of play and the play environment during the training course may influence more general attitudes about the value of applying the knowledge after training.

Moreover, four weeks after training, there was still a positive correlation between the two variables ( $r=0.371$ ,  $p<0.001$ ). It could be that nursery workers had applied what they learnt to their daily work and were able to retain their knowledge of play and the play environment gained from the MMTP, as well as increase their positive attitudes even though the training had finished.

**Interestingly, the results show that the higher a participant's scores in knowledge towards the importance of play and the play environment, the more positive their attitudes scores.** It could be claimed that the importance of the MMTP training lies in helping nursery workers to develop knowledge and attitudes that can be utilised and applied to their work in taking care of children in childcare centres. It could also be inferred that the more training that nursery workers have received on the value of play and the environment, the more opportunity children have to play.

## 5.5 The Main Findings of the Qualitative Analysis

As a semi-structured interview method was used as part of the qualitative data collection, this section will focus on the analysis of findings from the interviews, which were conducted with the eight nursery workers who had the highest differences in scores within their MMTP groups. The main results can be divided into three categories as follows:

### 5.5.1 Lessons Learnt from Participating in the MMTP

After attending the training, the majority of participants were found to have gained a significant knowledge of play and child development. They were able to obtain a good understanding of their role and how it can impact on child development, play activities and environment.

It was also revealed that the participants had a positive experience with the MMTP.

They reported that the training allowed them to get to know other nursery workers from different childcare centres and to share knowledge with each other.

In summary, all participants had positive attitudes towards the MMTP and general training. They reported that the trainer was professional and skilful in teaching, motivating trainees, using appropriate multimedia teaching tools and summarising and simplifying important topics. They also found the atmosphere impressively warm, welcoming and friendly, which encouraged them to express and exchange their opinions and experiences.

These findings could be explained thus: in order to provide effective training to nursery workers, it is important to ensure that the training is conducted in a friendly and warm environment. A good environment will encourage participants to build a relationship with the trainer and other participants. The multimedia teaching tools played an important role, allowing the participants to enjoy and easily understand the content of the training.

### 5.5.2 Application/Use of the MMTP after Training

It was shown that the participants were able to apply the knowledge gained from the training to their work settings. For example, they adjusted their childcare centres in **order to better support children's play and environment. They also enhanced their management of children's play with** the intention of maximising child development.

In addition, the participants claimed that the knowledge gained had improved their attitudes towards taking care of children and encouraging children to play. They now had a good understanding of why play was critical for children and how to create play with limited resources regarding nursery workers and budgets. They integrated the experience gained from the training with their improved attitudes and applied it to their work. For example, they selected and created toys and learning media by using recycled materials. They rearranged the environment in their centres, creating local media and material corners for children to play. They were also aware of the value of local wisdom, consulting with elderly people about learning experience activities.

**The participants also adjusted the children's play environments to ensure that they were safe, clean and accessible. Additionally, they ensured that there were enough play materials for children by creating toys from their surroundings and asking children's parents to donate toys to the centre.**

In conclusion, the MMTP training was able to link theoretical training to field practice. Nursery workers underwent training that aimed to increase their knowledge and

attitudes towards play and the play environment via the multimedia teaching technique. As a result, they applied what they had learnt from MMTP to their work in childcare centres. This will benefit children by promoting their development.

### 5.5.3 Barriers to Using the MMTP and Their Solutions

The semi-structured interviews identified certain barriers to utilising the MMTP in childcare centres. These have been grouped into four main areas: problems with people such as lack of support from parents and the community, lack of learning material and resources, poor administrative management on the part of SAOs and problems with old buildings and narrow surrounding areas.

#### 5.5.3.1 People

As shown in Chapter 4 (see Table 4.12 page 181), there were several examples of problems involving other people. Some more examples are given below, along with discussion and suggestions.

##### Nursery Workers

One participant, a head of a childcare centre, raised the issue of conflict between staff when balancing lesson plans and play activities. She was addressing this problem by using separate classrooms for lessons and play, and supervising the children herself during play activities. She had reported this situation to the SAO committee, but they had no clear advice. She compromised in order to solve the problem, but expressed the need for support from the SAO on this issue. This shows that the participant was concerned about the importance of play to children.

##### Children

All participants encountered the problem of each child preferring different activities according to their age. The nursery workers thus encouraged them to play and look after each other as brothers and sisters.

One of the childcare centres was caring for a child with poor concentration (ADHD) and another for a child with communication delay. Nursery workers devoted extra time to these children and encouraged other children to play with them.

##### Parents

A frequent problem, encountered by all the nursery workers interviewed, was parents obstructing play and the play environment in childcare centres. The nursery workers were having meetings about this problem every three months with their SAOs, whose help they needed to solve the problem. The first method that they carried out was

meeting parents in order to clarify the childcare centre policy before children were first admitted. They then held follow-up meetings with the parents every month to report **on their child's growth and development.** It seems that nursery workers were attempting to ensure more play activities with children by means of this monthly meeting, which aimed to promote harmonious relationships among nursery workers, parents and the community.

### 5.5.3.2 Lack of Learning Materials

The eight participants explained their solutions to the lack of learning materials and resources as follows:

Two of the **participants had the occasional opportunity to access the community's** learning resources and local material until they were familiar enough with the resources to use them in their learning provision for children.

All participants mentioned that they often bought new toys with their own money.

Due to insufficient learning materials, nursery workers encouraged children to share toys and play as a group.

In order to combat the lack of budget for maintenance, building repair and materials, they encouraged the **children's parents to donate toys, and sought funding from** private organisations or the community.

Nursery workers were also able to integrate local wisdom into their childcare. They invited elderly people to visit the centres in order to tell folk stories and teach children to produce simple local material.

All participants (even the three who worked alone in their centres and so did not have much time) made toys and created play equipment from materials that were cheap, otherwise waste or found in surroundings. They made them during their free time at **home or during children's nap time in the childcare centre. This shows that they held** positive attitudes about play and the play environment, and thus applied their new knowledge to their work despite time and budget constraints. The suggestion from this researcher is that there should be a school holiday period in order to allow nursery workers to prepare teaching materials.

### 5.5.3.3 SAO Management, Administration and Support

All participants reported that the Sub-District Administrative Organisations (SAOs) could improve their management of the childcare centres. They described how they had tried to negotiate for a better budget and report all problems to the SAOs promptly, but there were still problems, which the participants had to solve by

themselves. The problems were complex, and the nursery workers found it difficult to deal with them. Therefore, it was important to have a good relationship with parents and the community, so they could provide them with information about the importance of play and the play environment for children in childcare centres. This process enabled local communities to increase their control over this life-shaping issue. This could take the form of community empowerment, which is more than just the involvement, participation or engagement of communities; it takes the form of community ownership of a problem and re-negotiating power, in this case, with the explicit aim of social and political change within the SAOs.

Participants also reported a problem with the early childhood curriculum; the Ministry of Education and the DLA designed the assessment criteria for children between three and five years old, but children in childcare centres are mostly aged between one and four. Children are not admitted to kindergarten, which uses these assessment criteria, until they reach three years old. Therefore, parents leave children in childcare centres until they are old enough for kindergarten. The early childhood curriculum includes activities promoting physical, emotional, social and cognitive development, but is rather undefined and makes no specific provision for children under three; nursery workers have to adapt the assessment criteria themselves.

Moreover, the education policy on preschool philosophy did not clearly reflect **childcare centres' services for younger children. The administrative structure (childcare** centres are under the control of SAOs) had both strengths and weaknesses. Strengths included trust in childcare centres and free service. Weaknesses included an over-bureaucratic administrative management. Childcare centres cared for different age groups including toddlers and preschoolers. Nursery workers provided general child healthcare and child development activities at the same time, including cleaning, preparing food, recording and reporting via documents.

As mentioned in the above section, nursery workers tried to negotiate with their SAOs for better budgets, but the money was not forthcoming.

#### 5.5.3.4 Poor Environment

Two of the participants had a problem with their buildings, which were old and narrow rooms. In each case, there was only one staff member in the childcare centre. Children of different ages had to use the room for all activities, such as learning, lunch and nap time. Therefore, the nursery workers kept all material on shelves or in a cabinet. The surroundings did not constitute a suitable space for outdoor play; the playground was hard and made of cement, and the play equipment was not stable or strong. During the interviews, the participants explained to this researcher that they had reported the issue to their SAOs many times and the SAOs kept saying that they had no more

budget. In order to solve this problem, nursery workers had been meeting with parents and the community, and it was planned that there would be a large cleaning and fixing project in the following weeks. This result implies that nursery workers are capable of solving difficult problems.

There is no doubt that the observed changes shown by the qualitative findings have produced strong evidence that the MMTP has a positive effect on both the knowledge and attitudes of Thai nursery workers towards the importance of play and the play environment.

## 5.6 Effectiveness of the MMTP Results: Reflections on the Extant Literature and Local, National and International Contexts

**It is clear that the MMTP was effective in improving nursery workers' knowledge and attitudes towards promoting play in young children.** This section will discuss the effectiveness of the MMTP within the context of extant literature and local, national and international childcare practices. The MMTP design drew on Knowles' adult learning principles (Knowles 1984; Knowles et al. 1998; Quinn & Hughes 2007) and existing evidence on effectiveness of training. According to Knowles, adults learn better when learning matches their needs and interests, is grounded in real life situations and incorporates their past experiences to shape their learning experiences. Furthermore, they learn better when engaged in self-directed learning processes and when their individual differences and individuality are respected and accounted for by the teacher. All of these principles were applied to the design and implementation of the MMTP (as described in Chapter 3). The MMTP features many of the effective learning characteristics and practices highlighted in adult learning and child caregiver training literature. Dunst and Trivette (2012), in their analysis of moderators of adult learning method practices from 58 randomised controlled trials, identified 22 characteristics and practices that are found to be effective in improving learning. These characteristics and practices can be found in different phases of training, namely the introduction, demonstration, practising, evaluation, reflection and mastery phases. They include out-of-class activities, self-instruction, classroom/workshop lectures, pre-class exercises, dramatic readings, imagery, role playing, simulations, learner input, real life examples, instructional videos, real life application, problem-solving tasks, learning games, written exercises, assessing strengths and weaknesses, reviewing experiences and making changes, performance improvement, journaling, group discussion about feedback, standards-based assessment and self-assessment. These characteristics and practices have an effect size (d) between -0.01-1.27. Dramatic readings or imagery used alone in the introduction phase account for the

smallest two effect sizes (-0.01 and -0.02 respectively) reported in Dunst and Trivette's analysis. The third smallest effect size (0.28) is found in the use of both dramatic readings and imagery. The largest four effect sizes are found in the use of performance improvement during the reflection phase, real life application in the practicing phase, strength and weakness assessment in the evaluation phase and standards-based assessment in the mastery phase (effect sizes are 1.27, 0.94, 0.94 and 0.86 respectively). A meta-analysis of child caregiver training (Fukkink & Lont 2007) identifies three moderators of caregiver learning. These are fixed content, alignment test and one-site location. In this meta-analysis, effect sizes (g) of fixed content versus non-fixed content are 0.66 and 0.66 respectively, whereas those of one-site versus multi-site implementation are 0.68 and 0.21 respectively. In terms of the test alignment (i.e. whether the test is aligned with the content used in the training), alignment tests have a bigger effect size than non-alignment tests (0.54 and 0.07 respectively).

The MMTP training used in this study, in accordance with the analysis of Dunst and Trivette (2012), possesses 11 characteristics and practices of the adult learning method: workshop lectures, role playing, real life examples, instructional videos, real life application, assessment of strengths and weaknesses, games, written exercises, experience review, discussion about feedback and standards-based assessment on knowledge and attitudes. It had fixed content, was implemented at a one-site location and featured alignment tests for knowledge and attitude on play. These characteristics and practices of the MMTP are therefore in line with adult learning principles and existing evidence (Knowles 1984; Knowles et al. 1998; Fukkink & Lont 2007; Quinn & Hughes 2007; Dunst & Trivette 2012). The effect sizes (d) of the MMTP on improving knowledge based on the second post-test are between 1.62 and 2.24. The effect sizes of the programme on improving attitude are between 1.11 and 1.15. However, this study provides another piece of evidence to support the effectiveness of adult learning **theory in improving nursery workers' knowledge and attitude towards play.**

It would be uncritical, however, to accept that the effectiveness of the MMTP was due solely to the use of adult learning principles and characteristics described above. The **results demand critical consideration of the MMTP's effectiveness in light of qualitative findings and local contexts.** The nursery workers (or at least the top performers in the treatment group) reported a number of structural barriers and inadequacies (e.g. staffing, budgets and materials) when implementing the MMTP in practice. Despite this, they managed to improve and retain knowledge and attitude and even implemented play activities in their childcare centres. As pointed out in Chapter 4, these nursery workers were essentially child advocates who had positive attitudes towards children and childcare. The Child and Youth Officer for British Columbia (2005) **described advocacy as an 'assertive and collaborative approach to problem**

**solving'.** Advocates engage the stakeholders, identify the problem, offer solutions to the problem and call for action (Early Childhood Advocacy Toolkit Ounce of Prevention Fund 2009). In this study, the child advocacy practices are characterised by persistence in improving childcare conditions and creativity in implementing play and seeking support. These personal yet important characteristics could contribute to learning **outcomes and behavioural changes.** This, however, begs the further question of 'how did these nursery workers acquire these characteristics?'. Close examination of the top eight performers reveals that all of them hold a qualification in early childhood education (Table 4.9). This researcher is therefore confident in claiming that the qualification has, knowingly or unknowingly, prepared them for positive attitudes towards children and childcare and child care advocacy characteristics and skills which are requisite for improving child play conditions.

The SPECIAL concepts that determine the content of MMTP deserve further discussion in regard to the application of MMTP in countries with similar childcare situations. The discussions are centred on two major regional reports on childcare: the UNESCO Report on Early Childhood Care and Education in South-East Asia (de Los Angeles-Bantista 2004) and the Asia-Pacific Regional Network on Early Childhood—ARNEC on Promoting Holistic Learning and Development in Early Years (Profeta 2012). According to these reports, Thailand has much in common with other South-East Asian countries in terms of childcare resources and practices. Some of the common concerns include inadequate staffing and equipment, lack of external support, a main focus on custodial care, unequal attention to domains of childhood development, lack of formally trained teachers, cultural beliefs that prevent child learning, lack of systematic and integrated approaches to promoting holistic child development, use of teacher-centred activities and lack of play and play environments. It is important to note that most of these concerns are also found in the childcare centres involved in the present study.

Profeta (2012) identified seven domains of child holistic development and compared these across 11 South-East Asian countries including Thailand. The seven domains are: (1) Self, Social & Emotional, (2) Cognitive, (3) Language/Communication, (4) Physical/Health, (5) Aesthetic/Creative, (6) Moral/Religious and (7) Technological. Among 11 nations, Malaysia is at the top of the list as all domains are included in its early childhood care and education programmes. Surprisingly, Thailand is at the bottom of this list as only three domains are included in its programmes (Self, Social & Emotional, Cognitive and Physical/Health). Across the domains, Cognitive and Physical/Health are the only two domains endorsed by all 11 countries, while Aesthetic/Creative and Moral/Religious are endorsed by only six countries.

The SPECIAL Play developed in this project corresponds to five holistic domains, namely (1) Self, Social & Emotional, (2) Cognitive, (3) Language/Communication, (4)

Physical/Health and (5) Aesthetic/Creative. The S, E and A in SPECIAL correspond to the first domain in the SEAMEO-INNOTECH (2011) report, while Intelligence (I) is equal to Cognitive. Despite the lack of Moral/Religious and Technological content, the SPECIAL Play firmly addresses the critical domains of childhood development and therefore aligns well with the regional movements in this area. Given its proven effectiveness in resource-limited childcare centres, the MMTP offers the opportunity for childcare centres within these countries or those with similar situations to adopt and apply its package in order to improve the attitudes and knowledge of their nursery workers towards play.

## 5.7 The Challenges and Difficulties Encountered in Organising and Conducting the Research

Following the content analysis of the four curricula, this researcher performed a search of the UK curricula available from the official website in order to compare it to the Thai curriculum. There was a little more bureaucracy involved with the DLA; they required a request letter, and then took two to three weeks to send back a permission letter. The Thai curriculum that the researcher received from the DLA was a hard copy document, collecting the content of the six-day training only.

### 5.7.1 Time Taken to Gain Approval

After all the documentation was agreed by peer review at the University of Southampton, all research instruments were implemented in Thailand. Thai Ethical Committee Approval was requested and obtained from Lampang hospital (Appendix 3.9) to conduct research in Mueang Lampang and Nonthaburi province. This process took around one month. This researcher then sent the following letters:

1. A request letter was sent to the Director of Lampang Provincial office for Local Administration for permission to collect data in Lampang city.
2. A request letter was sent to the Director of the Department of Local Administration for permission to collect data in Nonthaburi province.

This process of attaining permission from both Lampang and Nonthaburi province took around two or three weeks.

### 5.7.2 Time Taken to Arrange Access to the Government Training Course

After attaining permission from the Director of the Department of Local Administration (DLA), this researcher made an observational visit to the official six-day training course before collecting data. At the same time, the researcher contacted a training organiser

to distribute and collect the pre-test and first post-test questionnaires and to ask participants to write their address on envelopes for sending out and returning the second post-test.

## 5.8 Limitations of the Study

Limitations were mentioned individually the section in Chapter 3. This requires some slight further discussion.

### 5.8.1 Limitations of Phase I: Part A

This content analysis had limitations within the methodology. The sampling technique was non-probability, with a focus on 13 unit contents from four selected curricula. Any claims to generalise results could not be substantiated. The methodological issues surrounding the language barrier between Thai and English also needed to be addressed. Therefore, the researcher selected bilingual coders to code all the key words systematically. The result of the content analysis was discussed with the translator in order to exclude misinterpretations of the content resulting from cross-cultural and cross-linguistic context (Graneheim & Lundman 2004). Parts of the document were translated from Thai into English by an independent translator, who was not involved in the study, in order to check for consistency in the translation. This did not result in any apparent differences in translation or content.

### 5.8.2 Limitations of Phase II: Part A

In this study, the childcare centres were chosen as random to select the sample group. Therefore, external factors relating to the childcare centres, such as the economic situations of the nursery workers and factors relating to management policies of the SAOs could not be controlled.

Some problems were encountered during data collection:

1. The pilot study had to be conducted twice. The first time, this researcher distributed the questionnaires at the end of a three-hour meeting at a central office when the respondents were tired and in a hurry to go home; therefore, the reliability was low. The second time, the researcher **distributed the questionnaires in the childcare centres during the children's nap time**. The nursery workers were able to focus on the questionnaires and so the reliability was higher.
2. The researcher had problems with the numbers of participants who attended the training days. For the intervention group, the researcher divided the participants into four groups of 15. However, only 12

participants showed up on the first training day. As such, more participants were invited for the remaining three training days, and this meant that for training day three and four there were over 15 participants.

3. The researcher also had problems with delayed response rates by post from the Nonthaburi control group. The researcher had to send out the questionnaires again to all the participants who had not replied. This reminder gave the researcher a high postal response rate of 83.7%.
4. The three sample groups in this study were required to answer the same questionnaires either twice (Lampang control group) or three times (Lampang intervention and Nonthaburi control groups) at different points in time. It is possible that they might have remembered the questions, thus impacting the scores. This researcher tried to decrease this factor by informing participants of the research objectives and requesting them to complete the questionnaires properly. The results of this study would be presented in summary form and it would not be possible to identify participants or individuals. It would not affect their roles and duties in childcare centres.

### 5.8.3 Limitations of Phase II: Part B

It was aimed that the results from the semi-structured interviews with the eight participants would support the quantitative results. The data were coded and themes were identified by one person; the analysis was then discussed with a supervisor. **However, this study's results are only part of a larger picture, therefore they are limited.** The results from this phase cannot be generalised as valid for all nursery workers. This process allowed for consistency in the method, but failed to provide multiple perspectives from a variety of people with differing expertise. When using this method for another study, the coding of data could involve several individuals, with themes being developed via discussions with other Ph.D. students. The generalisability of this part was limited due to purposive sampling, thus application of these results to other groups should be carried out with caution.

## 5.9 Chapter Summary

This is the first study to design and evaluate a multimedia teaching package (MMTP) in order to enhance the knowledge and attitudes of Thai nursery workers regarding the importance of play and the play environment.

The above discussion has highlighted that, according to the results of this study, the MMTP was efficient and effective. It could suitably and effectively result in a significant

increase in knowledge and positive attitudes in Thai nursery workers towards the play environment's role in promoting child development.

The finding from this study have supported the three research hypotheses; the nursery workers in the Lampang intervention group saw a significant increase in their mean scores in knowledge and attitudes towards the play environment in the first and second post-test compared to the pre-test ( $p$ -value  $<.05$ ). There were also significant differences in their mean scores of knowledge and attitudes in the first post-test from those of the Nonthaburi control group ( $p$ -value  $<.05$ ) and also in the second post-test from those of both the Lampang and Nonthaburi control groups ( $p$ -value  $<.05$ ).

The results from the semi-structured interviews with eight nursery workers illustrate that they gained much new knowledge of the importance of play and the play environment, use of play activities for promoting child development in their childcare centres and ways to rearrange the childcare environment in order to make it more suitable for play. However, they encountered many barriers to utilising this knowledge in their work, such as lack of budget, work overload and poor material management.

The final chapter will present the main conclusions of this research, implications of the findings, and recommendations for further study.

# Chapter 6: Conclusions and Recommendations

This final chapter will reiterate the overall implications of the findings of this project, and provide recommendations for further study.

## 6.1 Conclusions from This Study

### 6.1.1 Summary of the Study Process

This researcher intended to investigate how the role of play and an enriched play **environment teaching package design could positively enhance Thai nursery workers'** knowledge and attitudes relating to this subject in institutional childcare settings.

The research question was this: will a multimedia teaching package enhance knowledge and attitudes relating to the importance of the play environment in Thai nursery workers?

The aim of this study was to design a multimedia teaching package and evaluate its effectiveness in enhancing the knowledge and attitudes of the importance of play and the play environment in Thai nursery workers. The study employed mixed methods research, utilising a sequential embedded quasi-experimental design, in order to achieve the overall research aim.

There were two phases to this research. The first was to design the intervention instrument, a multimedia teaching package (MMTP) based on a summative content analysis of one Thai and three UK curricula, in order to train Thai nursery workers. The second phase was to evaluate the effectiveness of the MMTP by comparing knowledge and attitudes between three sample groups of Thai nursery workers: one group received the MMTP training (the Lampang intervention group), one received no training (the Lampang control group) and one received the official government training (the Nonthaburi control group).

During the first phase, the results of the content analysis showed that there were three components vital to the MMTP: the professional role of Thai nursery workers, the importance of play and the play environment and promoting child development through play activities.

The training technique was inspired by visits to Brockenhurst College, observational **visits to the children's** wards and Taplins Day Nursery at Southampton General Hospital and training with the Southampton Early Years Development and Childcare Partnership,

organised by Southampton City Council's Early Years and Childcare Workforce Development Team. The teaching strategies were designed in line with Knowles' principles of adult learning.

Furthermore, the researcher developed the design of the questionnaires in order to assess the MMTP, which included multiple choice questions (MCQs) for measuring knowledge and Likert scales for measuring attitudes; the questionnaires constituted the data collection instrument.

All instruments - the MMTP, knowledge MCQs, attitudes Likert scales and semi-structured interviews - were translated into Thai then back-translated into English in order to check the equivalence of meaning. The components were verified for their content validity, suitability and practicality by specialists before being improved and tested with the target group.

The result of this test for the knowledge questionnaires was  $\alpha=0.809$ ; for the attitudes questionnaires it was  $\alpha=0.816$ . Both Cronbach's alpha values were over the critical point of 0.7, indicating that both instruments' reliability was acceptable and suitable for use in the study.

In the second phase, after the pilot study, this researcher implemented the MMTP in Thailand in order to evaluate its effectiveness. A comparison of knowledge and attitudes was made between three sample groups of Thai nursery workers: one group received the MMTP training (the Lampang intervention group), one received no training (the Lampang control group) and one received the official government training (the Nonthaburi control group). The total sample consisted of 226 Thai nursery workers. Data collection was conducted at three points in time: before training (the pre-test), immediately after training (the first post-test) and four weeks after training (the second post-test).

The total sample consisted of 226 participants, which was large enough to be confident that the sampling was normally distributed. It was therefore appropriate to use the analysis of variance, a parametric method, to analyse the data described here. Nevertheless, the central limit theorem states that when the sample size is greater than 30, the sampling will follow a normal distribution regardless of the underlying population distribution (Field 2009; Bryman & Cramer 2011; Field et al. 2012).

This researcher then purposively sampled from the Lampang intervention group, selecting the two nursery workers with the greatest differences in their pre- and follow-up post-test scores from each of the four subgroups; a total of eight nursery workers were invited to the semi-structured interviews to further explore and expand on the quantitative results. Other purposes were to glean nursery workers' views of the

MMTP after training and explore the barriers they found in applying the MMTP to their work.

### 6.1.2 Discussion

The effectiveness of the MMTP in this study shows that all sessions were suitable for one-day training. There are, however, some concerns regarding the way educational level has an impact on positive attitudes in the long term. When the intervention is next performed, it should first be extended to other districts in Lampang province, and then to neighbouring provinces, in order to explore the effect of education in greater detail and ensure good results. There should also be a longer follow-up with individual nursery workers, and it should be ensured that the children in the centres are of similar ages when making comparisons with the control group. The numbers of participants in the MMTP should not exceed 20-25 per group. Alternative media versions of the MMTP should be available on DVD or online, so that everyone can access them for further study. The most effective parts of the MMTP were the workshops, where nursery workers applied and integrated their knowledge gained through daily work in childcare centres by using the story bag. Extra or different approaches might have improved the outcome. Alternative versions might be developed, one for nursery workers with a university degree background and another for those without (see 6.2.1 page 204). However, this was not possible with the resources and time available; it could be a subject for future research. Further versions of the MMTP could be developed in order to meet a range of local or specific needs still to be identified.

In conclusion, the results of this study indicated that the MMTP was efficient and effective enough to cause a significant increase in knowledge and positive attitudes in Thai nursery workers relating to the importance of play and the play environment. In answer to the research question, it can be claimed that the research objectives have been met.

### 6.1.3 Results Summary by Research Hypothesis

Three research hypotheses in this study were accepted as follows:

1. According to Research Hypothesis 1, nursery workers in the Lampang intervention group would show a significant change in both knowledge and attitudes scores in the first and second post-tests compared to the pre-test.

This was confirmed by the first post-test, which showed that as soon as training had finished, the MMTP had efficiently increased the knowledge and attitudes of nursery workers in the subjects given. Furthermore, they were able to retain the knowledge

gained from the MMTP and still had positive attitudes towards the subjects even a month after the training day. The reason that their knowledge and attitudes level increased in the second post-test could be because they applied what they had learnt from the MMTP to their daily work. Hence, the knowledge and attitudes gained from the MMTP had become more practical to them.

2. Research Hypothesis 2 suggested that the observed change in both the knowledge and attitudes scores of nursery workers in the Lampang intervention group would be greater than the Nonthaburi control group when assessed in the first post-test.

This finding proved that the MMTP design was highly effective in improving knowledge and attitudes, and also that it had a dramatically positive impact on the participants. The findings also indicated that the current official training did not have any impact on either the knowledge or attitudes of the participants towards play and the play environment.

3. Research Hypothesis 3 suggested that nursery workers in the Lampang intervention group would display a greater change in their knowledge and attitudes scores in the second post-test than those in the two control groups.

The confirmation of this finding indicates that the MMTP successfully enhanced **nursery workers' knowledge** and dramatically improved their attitudes towards play. The change was sustained for four weeks after training. This could imply that appropriate training such as the MMTP enables nursery workers to retain knowledge gained from the training as well as improve their attitudes towards play.

Even though official training was provided to the Nonthaburi control group, it was only the Lampang intervention group, who were given the MMTP, who were found to achieve a significant change in knowledge and attitudes.

#### 6.1.4 Results Summary by Covariates and the Relationship between Variables

When comparing the change in the mean scores of knowledge and attitudes, four covariates were used: 1) age, 2) years of work experience, 3) educational level and 4) nursery worker to child ratio. The findings revealed that none of the covariates had any impact on the variables (knowledge and attitudes) between the Lampang intervention group and Nonthaburi control group in the first post-test.

Meanwhile, it was only educational level that affected the change in attitudes scores among the three sample groups in the second post-test. As mentioned in Chapter 5, this could imply that participants with educational backgrounds in Early Childhood Education are more likely to understand the issues and problems that occur while

taking care of children than those who do not have the relevant education. They were better able to retain good attitudes towards children and play four weeks after training.

The other covariates (age, years of work experience and nursery worker:child ratio) did not have any impact on changes in attitudes. Again, it was suggested in Chapter 5 that future MMTP trainers may need to spend more time with trainees who do not have an educational background relating to Early Childhood Education than with those who do. This would ensure that all participants have as similar a background as possible before starting the MMTP programme, as it will eventually impact on their attitudes and how they view play.

None of the covariates were found to have any impact on changes in knowledge. This strongly suggests that the MMTP was effective and practical, and that participants from different demographic groups would easily be able to learn from the training and utilise their knowledge in their work in childcare centres.

In addition, the findings tested using Pearson correlation showed that there was a significant positive correlation between knowledge and attitudes scores among the three groups at all three points in time. Interestingly, these results show that the MMTP training can help nursery workers to apply their developed knowledge and attitudes to their work. It could be inferred that the more training nursery workers have pertinent to the value of play and the environment, the more opportunity children have to play.

#### 6.1.5 Results Summary of the Semi-Structured Interviews

The analysis of the results of the semi-structured interviews identified three main areas: lessons learnt from participating in the MMTP training, application of the MMTP after training and barriers to utilising the MMTP.

Participating in the MMTP meant that participants gained new knowledge and positive attitudes relating to the importance of play and the play environment, and were able to use play activities in order to promote child development in their childcare centres.

They claimed to have obtained a good understanding of their role and how it can impact on child development, play activities and environment.

All participants held positive attitudes towards MMTP and believed it to be effective training for nursery workers. The participants also reported a positive experience from MMTP. They used what they had learnt to rearrange the childcare environment to make it more suitable for play. They created learning media from local material and arranged **play environments that would support children's learning through play; this was considered to be an important aspect of nursery workers' duties.**

It was shown that the participants were able to apply the knowledge gained from the training to their settings and had improved their attitudes towards encouraging children to play. They selected and created toys and learning media by applying recycled materials in order to promote child development play in childcare centres. The participants also adjusted children's play environments in order to ensure that they were safe, clean, and accessible. They made sure that there were enough play materials for children by creating toys from their surroundings and asking children's parents to donate toys to the centre.

However, participants encountered a number of barriers to utilising the MMTP. It transpired that the number of children per nursery worker was too high, and that because the children ranged in age, it was hard to persuade them to play as a group. There were also other problems, such as lack of learning material and resources, lack of budget, lack of support from parents and community, unsafe environment, old buildings and poor administrative management on the part of SAOs. The eight participants all experienced issues differently, and were capable of solving problems in different ways. Despite these barriers, they were able to develop their knowledge and attitudes in order to care for children in their centres through play.

## 6.2 Recommendations

In order to provide a broader connection to the implications of these findings, they could be applied to several areas of the professional nursery worker setting as follows:

### 6.2.1 Recommendation When Applying the MMTP Training

1. The results of this study showed that only educational level affected the change in attitude scores four weeks after training. For any subsequent training periods, it is suggested that the MMTP trainer should take into account participants' educational backgrounds relating to early childhood education. Participants could be separated into two groups according to their education background; alternatively, more time could be spent with participants who do not have an educational background in early childhood education in order to ensure that all participants have as similar a background as possible before starting the MMTP training, as this will eventually impact on their attitudes and how they view play.

2. The results of the semi-structured interviews with the eight nursery workers suggest that there should be a longer period for following up and evaluating the effectiveness of nursery workers; this would result in greater consideration of the problems and obstacles that they encounter and more opportunities for finding

solutions, consequently providing a greater chance for children to reach the fullest potential in their development.

3. Because the MMTP features seven workshops during the one-day training, it requires at least three facilitators to help with training arrangements. Facilitators should have good social skills, rhetoric, agility and a good knowledge of the target group. This will help the training to achieve its goals.
4. The findings prove that the absence of any change in knowledge and attitudes towards play and the play environment associated with the official training reflects the limited time allocated to teaching in this area; the explanation is provided by the content analysis, which found that the Thai curriculum did not focus enough on this subject, resulting in a big gap in the knowledge and attitudes of nursery workers relating to play. It is recommended that the Department of Local Administration (DLA) add this topic into the official training.
5. Local administrators who supervise childcare centres should have more understanding of health promotion; they should be pushing health promotion public policy among early childhood providers, planning a health promotion budget for this age group, alerting local media to health promotion and encouraging academic institutes to help and support childcare centres. This would promote health, intelligence, wellness and good child development in accordance with the Eleventh National Health Development Plan (2012-2016).
6. The entities promoting child development through policy should monitor and evaluate the operation of childcare centres to make sure they conform to the determined standard; this could involve encouraging local executives or workers to be aware of problems and focus on solving them quickly.
7. Even though the MMTP was effective, the eight nursery workers' reports about the limitations of utilising the MMTP after training showed that there were many barriers. What improvements could be made in these areas so that the MMTP could be better achieved?
8. The MMTP can be adopted by childcare centres in countries with similar resources or situations that endorse the SPECIAL domains of holistic childhood development. The adoption should take into consideration contextual local differences; adaptation of the programme or its package may be needed to best suit local and children's needs.

### 6.2.2 Recommendations for Future Study

Based on the results of this study, the following recommendations should be taken into account for future research.

### 6.2.2.1 Comparing Children by Age Group

The impact of the activities recommended by the MMTP on children in different age groups needs to be researched. The effect on children aged 2-3 years in a childcare centre where nursery workers have received MMTP training could be compared with the effect on children of a similar age from a group where nursery workers have not undergone the training. The aim would be to measure the nursery workers' **knowledge** and attitudes alongside the development of the children in their care over a long-term period, ideally after six months, one year and two years, in order to keep track of the changes in child development according to organisation of the play environment. This would be a way of evaluating the efficiency of the teaching package training in the long term.

### 6.2.2.2 Extension to a Wider Group

1. A long-term evaluation of the sustainability of the MMTP should be carried out. This study tested the effectiveness of the training after a short period of time (four weeks after training). Thus, a subsequent study should follow up with nursery workers in the intervention group after a period of three months, six months or one year in order to study the changes in knowledge and attitudes after a greater period of time.
2. The MMTP was proven to be effective in improving knowledge and attitudes towards the importance of play and the play environment. Therefore, the DLA should consider adding this training to their curriculum. The MMTP could be used for both pre-service and in-service training of nursery workers in Thailand.
3. Further research may explore the effect of the MMTP in people involved in other aspects of early childhood care (parents, daycare, foster care, orphanages and paediatric nursing) who care for children with Down's syndrome, autistic children and children with Attention Deficit Hyperactivity Disorder (ADHD). Similarly, it may be useful to apply the MMTP training to other target groups (parents, community) in order to validate the present results in other geographical and ethnically diverse areas of Thailand and other related agencies (private nurseries) in early childhood care.
4. It would be helpful to research and develop alternative media versions of the MMTP, such as VCD, DVD and computer or website-based instructional manuals.
5. Research could be further undertaken on the need for and function of a Provincial centre providing in-service training for Thai nursery workers, with MMTP being a key part of that training.

6. The MMTP could be strengthened by giving nursery workers access to extended social networks such as Facebook and Twitter in order to share and exchange local media and produce learning media for children to play with in childcare centres.
7. The factors which enable the promotion of the importance of play and the play environment like management, limited funding, and ratio of nursery workers to children should be considered; this could help to develop the MMTP training via organisational leadership, the participation of organisations and the cooperation of the community.

#### 6.2.2.3 Suggestions for the National Level Government Training Programme

The results of this study should be demonstrated to government agencies such as the Department of Local Administration (DLA), the Ministry of Education and the Ministry of Public Health.

All of these organisations should cooperate in order to raise awareness of the importance of play and the play environment in promoting child development in childcare centres and to support nursery workers in childcare centres.

The department of Local Admiration (DLA) should emphasise nursery workers' training and support the development of the MMTP.

#### 6.2.3 Other Important Recommendations

It is clear from the literature review that very little is documented on how Thai children normally play at home or at child care centres. Future research studies should therefore investigate plays, play practices, play environments and factors influencing such issues in Thailand. These studies will form basic yet important information about play leading to future improvements in this vital aspect of child development in this country.

### 6.3 Chapter Summary

This study has developed and evaluated the effectiveness of a multimedia teaching package (MMTP) designed to enhance knowledge and attitudes of the importance of play and the play environment among Thai nursery workers by using a mixed methods research design in two phases. The first phase involved designing the MMTP based on a content analysis of UK and Thai curricula for training Thai nursery workers. The second phase was to evaluate the effectiveness of the MMTP by comparing knowledge and attitudes among three sample groups of Thai nursery workers: one group received

the MMTP training (the Lampang intervention group), one received no training (the Lampang control group) and one received the official government training (the Nonthaburi control group). The total sample consisted of 226 Thai nursery workers.

Data collection was conducted in three periods: before training, immediately after training and four weeks after training. Nursery workers in the Lampang intervention group were found to have a significant improvement in knowledge and attitudes towards the importance of play and the play environment immediately after training; this was further improved after four weeks. Neither of the control groups showed any improvement in knowledge or attitudes. There were no comparable changes in either of the control groups.

Five weeks after training, semi-structured interviews were carried out with eight participants from the Lampang intervention group. These provided insights into lessons learned in three main areas: what was learned from participating in the MMTP training, what was learned from applying the MMTP to the nursery situation and barriers and solutions related to use of the MMTP.

The student designed the MMTP training in order to impress the importance of play and the play environment upon Thai nursery workers and improve their knowledge and attitudes related to the subject so as to enhance their work in childcare centres.

In particular, participants in the MMTP training group showed that they had gained new knowledge and positive attitudes towards the importance of play and the play environment, and were able to use the play activities taught in order to promote child development in their childcare centres. They claimed to have obtained a good understanding of their role, held positive attitudes towards MMTP and understood how it could impact on child development, play activities and environment.

It was clear that the participants were able to apply the knowledge gained from the training to their settings and had improved their attitudes towards encouraging children to play and promoting child development play in childcare centres.

The results of this study indicated that the MMTP was efficient and effective in improving both knowledge and attitudes of Thai nursery workers towards play and the play environment, which could be applied to their daily work in order to promote child development through play. This study achieved its objectives.

It is concluded that using the MMTP training package to train all nursery workers in Thailand might improve knowledge and attitudes towards play and the play environment and have the potential to enhance child development in the future.

However, future studies will need to be undertaken in order to promote positive attitudes and knowledge towards play and the play environment and child development such as extension to a wider group, comparison among children by age group and involvement in other people aspects of early childhood care. This could currently be conducted by government organisations by including the MMTP training in their teaching programme for nursery workers so that the importance of play and the play environment could be more officially encourage



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## Appendices



## Appendix 2.1: Eight English Databases for Search

Databases	Description
The Allied and Complementary Medicine Database (AMED)	AMED is a unique bibliographic database produced by the Health Care Information Service of the British Library. It covers a selection of journals in complementary medicine, palliative care and several professions allied to medicine including physiotherapy, occupational therapy, podiatry and rehabilitation.
Applied Social Sciences Index and Abstracts (ASSIA)	Provides international coverage of social sciences, health and education. The database covers the fields of social services, health and education and is international in scope. Its coverage is from 1987 onwards, and is updated monthly.
Cumulated Index of Nursing and Allied Health Literature (CINAHL)	CINAHL provides access to a wide range of full text articles, many published in the United States, relating to nursing and allied health, health sciences education, behavioural sciences and management. This is one of the most useful search engines for nurses, covering 1200 journals worldwide (Polit & Beck, 2006). Provides a variety of information related to different health professions and enables a detailed search. In the United States, it is considered the premier database for nursing topics (Burnham and Shearer, 1993).
MEDLINE	MEDLINE is produced by the National Library of Medicine in Maryland which began coverage in 1966. MEDLINE covers all areas of biomedicine, including allied health fields and the biological and physical sciences. MEDLINE indexes the latest articles from more than 3,900 biomedical journals published in over 70 countries.
PsycARTICLES	PsycARTICLES, from the American Psychological Association (APA), is a definitive source of full-text, peer-reviewed scholarly and scientific articles in psychology. The database contains more than 134,000 articles from 63 journals - 50 published by the APA and its imprint, the Educational Publishing Foundation (EPF) - and 13 from allied organisations. It includes all journal articles, book reviews, letters to the editor, and errata from each journal. Coverage spans 1894 to present; nearly all APA journals go back to Volume 1, Issue 1.
Psychology Information (PsycINFO)	Provides coverage of psychological, social behavioural and health sciences literature. PsycINFO, from the American Psychological Association (APA), contains nearly 2.4 million citations and summaries of scholarly journal articles, book chapters, books and dissertations, all in psychology and related disciplines, dating as far back as the 1800s. 98% of the covered material is peer-reviewed. Journal coverage, which spans 1887 to present, includes international material selected from more than 2,200 periodicals in more than 27 languages. Provides world-wide English language coverage of psychological, social behavioural and health sciences literature.
Web of Knowledge	The Web of Knowledge provides access to current and retrospective multidisciplinary information from approximately 8,700 of the most prestigious high-impact research journals in the world. It also provides a unique search method and cited reference searching. Users can navigate forward, backward and through the literature,

Databases	Description
	searching all disciplines and time spans to uncover all the information relevant to their research. The large databases were compiled to provide world-wide coverage of science and social science literature for current journals. These databases contain: references with author abstracts, where available, from 8,000+ peer-reviewed journals; coverage from 1981 onwards, updated weekly; and access to cited references so the reader can trace who has cited a particular article. Most of the psychology journals are covered by the Social Sciences heading but topics like psychiatry, neuroscience and medicine are included under Science, Social Sciences Citation Index, Science Citation Index, and Arts and Humanities Citation Index.
The Cochrane Library (Cochrane Reviews)	This includes reports that are RCTs or clinical trials (French 2002). The Cochrane Library also includes systematic reviews; as such, the database has to be searched before the start of an evidence-based practice dissertation to determine what other information there is on the subject.

Adapted from: University of Southampton (University of Southampton 2012)

## Appendix 2.2: 14 Thai Databases for Search

No.	Name of database	Website
1	Thailand Library Integrated System	<a href="http://www.thailis.or.th/tdc">http://www.thailis.or.th/tdc</a>
2	Research Library of the National Research Council of Thailand	<a href="http://www.riclib.nrct.go.th">http://www.riclib.nrct.go.th</a>
3	Knowledge Bank of Health Systems Research Institute and Alliances	<a href="http://kb.hsri.or.th/dspace">http://kb.hsri.or.th/dspace</a> <a href="http://dspace.hsri.or.th/dspace">http://dspace.hsri.or.th/dspace</a>
4	Database on educational, religious and cultural research	<a href="http://www.thaiedresearch.org">http://www.thaiedresearch.org</a>
5	Thailand Knowledge Centre e-thesis (TKC e-thesis)	<a href="http://www.tkc.go.th/thesis">http://www.tkc.go.th/thesis</a>
6	Chulalongkorn University Institutional Repository (CUIR)	<a href="http://cuir.car.chula.ac.th">http://cuir.car.chula.ac.th</a>
7	Mahidol University Library and Knowledge Centre	<a href="http://www.li.mahidol.ac.th">http://www.li.mahidol.ac.th</a>
8	Chiang Mai University Library	<a href="http://library.cmu.ac.th/digital_collection/etheses/e_index.php">http://library.cmu.ac.th/digital_collection/etheses/e_index.php</a>
9	Lady Atthakraweesunthorn Learning Resources Centre, Prince of Songkla University	<a href="http://download.clib.psu.ac.th/databeclib/e_resource/digital_library_project/thesis/index.php">http://download.clib.psu.ac.th/databeclib/e_resource/digital_library_project/thesis/index.php</a>
10	iKnowledge Digital Contents Management System, Burapha University	<a href="http://digital_collect.lib.buu.ac.th/dc_msth/main.nsp?view=DCMS">http://digital_collect.lib.buu.ac.th/dc_msth/main.nsp?view=DCMS</a>
11	Science and Technology Knowledge Centre	<a href="http://www.stkc.go.th/library.php">http://www.stkc.go.th/library.php</a>
12	Thai Thesis Database on Science Technology Knowledge Services Thailand (STKS)	<a href="http://thesis.stks.or.th">http://thesis.stks.or.th</a>
13	Journal Link Thailand	<a href="http://www.journallink.or.th">http://www.journallink.or.th</a>
14	Thai Research (National Science and Technology Development Agency)	<a href="http://www.thairesearch.in.th">http://www.thairesearch.in.th</a>

## Appendix 2.3: Using Thesaurus for Identifying Search Terms (in English Databases)

Using Thesaurus	Concept group 1: To identify the training programmes Use term <b>'train'</b>	Concept group 2: To identify the staff being trained Use term <b>'nursery'</b>	Concept group 3: To identify the place where the staff work Use terms <b>'preschool'</b> <b>'day care'</b>	Concept group 4: To identify child development in weak skills Use term <b>'child development'</b>	Concept group 5: To identify activities that should be encouraged in nurseries Use term <b>'play'</b>	Concept group 6: To identify the environment Use term <b>'environment'</b>
ASSIA Database (ERIC)	Training	Nursery schools	Preschool children	Child development	Play	Environment
	Trains	Nursery nurses	Preschools		Plays	Environment rooms
			Day care		Play areas	
			Day care centres		Playgroups	
			Day time		Playtimes	
			Day centres		Play schemes	
			Day nurseries		Playfulness	
			Child care centres			
			Child development centres			
AMED	Professional practice	Child	Child	Child development	Play and play thing	Environment
		Schools	Child preschool	Child		
			Day care			

Using Thesaurus	Concept group 1: To identify the training programmes Use term <b>'train'</b>	Concept group 2: To identify the staff being trained Use term <b>'nursery'</b>	Concept group 3: To identify the place where the staff work Use terms <b>'preschool'</b> <b>'day care'</b>	Concept group 4: To identify child development in weak skills Use term <b>'child development'</b>	Concept group 5: To identify activities that should be encouraged in nurseries Use term <b>'play'</b>	Concept group 6: To identify the environment Use term <b>'environment'</b>
CINAHL MEDLINE PsycINFO PsycARTICLES Database (EBSCOhost)	Social Skills Training	Schools, Nursery	Day care	Child develop*	Play and Play thing	Environment
	Program Development	Teachers	Daycare		Role Play	Learning Environment
	Programmed Instruction		Day nursery			
	Teaching Methods		Nursery			
	Teaching Materials		Nursery school			
	Remedial Teaching		Schools, Nursery			
	Staff Development Instructor		Child			
	Professional Development		Child care			
	Staff Development		Child Day Care			
	Self Awareness Enhancement		Child, Preschool			
The Cochrane Library	Teaching or Training Support	Schools, Nursery	Child, Preschool	Child Development	Play and Play thing	Environment
	Staff Development		Child day Care Centers		Role Playing	Environmental Health
	Education, Schools, Nursing		Day Care			

## Appendix 2.4: An Illustrated Example to Combine Terms

CINAHL in Abstract	Keyword
Concept Group 1	("training" or "anxiety management training" or "behavioural training" or "brief training" or "clinical training" or "coaching" or "cognitive skills training" or "communication skills training" or "computer assisted training" or "cotraining" or "crosscultural training" or "extension training" or "feedback training" or "biofeedback training" or "fellowship training" or "imagery training" or "inservice training" or "intensive training" or "joint training" or "mandatory training" or "mentoring" or "personal development training" or "postqualifying training" or "postregistration training" or "preregistration training" or "preservice training" or "pretraining" or "professional training" or "rater training" or "refresher courses" or "resistance training" or "retraining" or "selfdefence training" or "skills training" or "basic skills training" or "psychological skills training" or "social skills training" or "spaced retrieval training" or "staff development" or "stress management training" or "high stress training" or "vocational training" or "apprenticeships" or "industrial training" or "training and enterprise councils" or "trains")
Concept Group 2	("nursery nurses" or "nursery schools")
Concept Group 3	( <b>child development</b> centres" or "day care" or "out of school care" or "day care centres" or "child care centres" or "day centres" or "child contact centres" or "day care centres" or "child care centres" or "drop in centres" or "consumer operated drop in centres" or "family centres" or "probation day centres" or "psychiatric day centres" or "day nurseries" or "preschool children" or "abused preschool children" or "autistic preschool children" or "behaviour disordered preschool children" or "bilingual preschool children" or "biracial preschool children" or "blind preschool children" or "deaf preschool children" or "developmentally delayed preschool children" or "developmentally disabled preschool children" or "disabled preschool children" or "multiply disabled preschool children" or "visually impaired preschool children" or "disadvantaged preschool children" or "emotionally disturbed preschool children" or "gifted preschool children" or "hearing impaired preschool children" or "hyperactive preschool children" or "language disordered preschool children" or "phonologically disordered preschool children" or "learning disabled preschool children" or "sensory motor impaired preschool children" or "sexually abused preschool children" or "sick preschool children" or "special needs preschool children" or "preschools")
Concept Group 4	Child develop*
Concept Group 5	( <b>"play"</b> or <b>"block play"</b> or <b>"dramatic play"</b> or <b>"language play"</b> or <b>"pretend play"</b> or <b>"social pretend play"</b> or <b>"role play"</b> or <b>"rough and tumble play"</b> or <b>"solitary play"</b> or <b>"speech play"</b> or <b>"symbolic play"</b> or <b>"toys"</b> or <b>"dolls"</b> or <b>"anatomically correct dolls"</b> or <b>"anatomically neutral dolls"</b> or <b>"gender stereotyped toys"</b> or <b>"water play"</b> or <b>"play areas"</b> or <b>"playgroups"</b> or <b>"plays"</b> or <b>"playtimes"</b> )
Concept Group 6	=("environment" or "academic climate" or "built environment" or "classroom environment" or "environmental debates" or "precautionary principle" or "facilitating environment" or "family environment" or "global environment" or "group environment" or "harsh environment" or "holding environment" or "home environment" or "hot environment" or "learning environment" or "marginal environment" or "noisy environment" or "organizational environment" or "psychological environment" or "psychosocial environment" or "school environment" or "social environment" or "stressful environment" or "urban environment" or "work environment" or "environmental rooms" or "multisensory rooms")

## Appendix 2.5: Overall Electronic Search Results from English Databases

Search in Abstract Search on 16/04/12	Electronic Database							
	AMED	ASSIA	CINAHL	MEDLINE	PsycARTICLES	PsycINFO	Web of Knowledge	The Cochrane Library (Cochrane Reviews)
Concept Group 1	5,512	101,420	54,239	177,468	11,964	164,268	1,048,313	75,353
Concept Group 2	11,148	795	42,310	81,537	5,027	146,809	302,318	4,958
Concept Group 3	10,948	31,178	2,614	11,145	363	9,893	66,140	9,730
Concept Group 4	11,119	19,465	33,462	151,659	4,881	147,124	983,856	7,807
Concept Group 5	200	10,247	31,458	558,064	3,718	102,749	2,498,095	8,468
Concept Group 6	1,497	93,940	31,301	215,638	3,635	103,867	2,673,965	5,030

## Appendix 2.6: Combining Different Concepts

Combination Search on 16/04/12	Electronic Database							
	AMED	ASSIA	CINAHL	MEDLINE	PsycARTICLES	PsycINFO	Web of Knowledge	The Cochrane Library
Concept Group 1&2&3&4	9	14	12	21	5	106	79	74
Concept Group 1&2&3&4&5	1	1	1	2	1	22	10	4
Concept Group 1&2&3&4&5&6	0	0	0	0	0	0	3	0
Limits - Linked Full Text; Publication Year from: 2000-2010; Published Date from: 20000101-20091231; English Language; Research Article; Evidence-Based Practice; Language: English Expanders - Also search within the full text of the articles Search modes - Boolean/Phrase	5	12	3	4	2	17	30	19
Inclusion and Exclusion Criteria Applied	0	0	1	3	1	6	20	0
Total	22							

## Appendix 2.7: Overall Electronic Search Result in Thai Database

Name of Database/Key Word	Thailand Library Integrated System	Research Library of National Research Council of Thailand	Knowledge Bank of Health Systems Research Institute and Alliances	Database on educational, religious and cultural research	Thailand Knowledge Centre e-thesis (TKC e-thesis)	Chulalongkorn University Institutional Repository (CUIR)	Mahidol University Library and Knowledge Centre	Chiang Mai University Library	Lady Atthakraweesunthorn Learning Resources Centre, Prince of Songkla University	iKnowledge Digital Contents Management System, Burapha University	Science and Technology Knowledge Centre	Thai Thesis Database on Science Technology Knowledge Services Thailand	Journal Link Thailand	Thai Research (National Science and Technology Development Agency)
Key Word Concept Group <b>'Childcare centre'</b>	561	84	3	26	12	11	32	19	4	10	12	2	0	0
Inclusion and Exclusion Criteria Applied	7	2	0	1	0	1	0	1	0	0	0	0	0	0
Final 1									9					
Key Word Concept Group <b>"nursery worker"</b>	111	61	11	24	9	21	40	13	8	5	9	3	0	0
Inclusion and Exclusion Criteria Applied	7	4	0	1	0	2	1	1	0	0	0	0	0	0
Final 2									10					
Final 1&2									10					

## Appendix 2.8: Overview of All English Articles

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
1	Cain et al. (2007) US	Effects of professional development training on joint attention engagement <b>in low-quality childcare centres</b> . To explore the effectiveness of professional development training on joint attention engagement in children from 18 to 24 months <b>of age enrolled in 'low-quality' childcare centres</b> .	48 childcare providers comprised the initial sample.	1. Quasi-experimental design 2. Childcare providers and children were videotaped to capture social interactions in the classroom including duration and bids for joint attention. One half of the 48 childcare providers were randomly assigned to receive professional development training (PDT) (the Focus-Follow-Talk® technique), designed to increase the frequency of joint attention. Three months after the PDT, following three coaching visits for each subject in the treatment group, 30 minutes of videotape was recorded and coded for each childcare provider in the treatment and control groups.	Significant findings were reported for the trained childcare providers on joint attention engagement duration and total bids for joint attention engagement. There was also evidence supportive of joint attention subtypes.	<u>Strengths</u> 1. Use of quasi-experimental design with a control group 2. Standardisation of raters (with good inter-rater reliability) <u>Weaknesses</u> 1. Non-randomised allocation of participants 2. Small sample size 3. Potential performance bias due to Hawthorne effect from VDO observation
2	Campbell and Milbourne (2005)	Improving the quality of infant-toddler care through professional development.	160 caregivers in 96 infant-toddler rooms in 48 childcare	1. Quasi-experimental design 2. Caregivers participated in a three-month training	The total mean scores on the ITERS showed a significant interaction between	<u>Strengths</u> 1. Use of quasi-experimental design with a control group

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
	US	The effect of a professional development programme on the quality of care provided for infants and toddlers was assessed with a sample.	programmes.	course with a standardised curriculum of five three-hour group classes and an out-of-class project. A total of 123 participants in 70 classrooms also received onsite consultation. Consultation was not provided for 37 participants in 26 classrooms. The effect of training programme participation was judged using pre- and post-training comparisons between mean total scale scores on the Infant/Toddler Environment Rating Scale (Harms, Clifford & Cryer 1990). Comparisons were also made between classrooms, where score differences were rated as observable change. Observable change was evident in 15 (21.4%) infant-toddler rooms in the consultation group, in comparison to two (7.7%) infant-toddler rooms in the no-consultation group.	time and group, but the mean scores of the no-consultation group decreased between the pre- and post-training measurement points. The researchers investigated the effect of other factors known to affect quality, such as level of caregiver education, years of experience, training group and person who provided the consultation, to determine if other factors may have related to these differences. No significant main effects were found for any of these factors; however, caregiver level of education and years of experience approached significance.	2. Sufficient sample size for experiment group 3. Standardisation of individual consultants 4. Standardisation of raters (with good inter-rater reliability) <u>Weaknesses</u> 1. Convenient allocation of participants
3	Draper et	Kinder training: Play-	Kindergarten	1. One-group pre-	As a result of the	<u>Strengths</u>

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			Sample	Design, data collection and analysis		
	al. (2001) US	<p>based consultation to improve the school adjustment of discouraged kindergarten and first grade students.</p> <p>To enhance teacher-child relationships, thereby improving the child's school adjustment both behaviourally and academically while simultaneously providing an opportunity for the teacher to improve relationship-building skills and classroom management techniques with all students.</p> <p>The purpose of the present study was to expand upon the previous research conducted on Kinder Training (White, Draper &amp; Flynt 1997; White, Flynt &amp; Jones 1999). While earlier work demonstrated the initial</p>	<p>teachers (n=7), kindergarten paraprofessionals (n=4), first grade teachers (n=3) and their selected students (n=14, although one student dropped out of the study at parental request) from a diverse suburban elementary school near Atlanta, Georgia.</p>	<p>test/post-test design</p> <p>2. To examine the effects of Kinder Training on selected kindergarten and first grade students' behaviour, social skills, and early literacy skills, as well as its effects on teacher behaviour in the classroom. Kinder Training involves the teacher in play sessions with a child who is exhibiting discouragement in the classroom. The teacher conducts play sessions while receiving supervision from a counsellor, learning skills that are both appropriate for the playroom and valuable for the classroom.</p>	<p>play sessions, the teacher-student relationship was enhanced, the student felt more encouraged in the classroom, and the teacher transferred the newly obtained skills to his or her work with other students. This transfer included an increase in facilitative statements, encouragement, and limit-setting.</p> <p>Additionally, the teachers decreased the number of praise statements and ineffective limit-setting.</p>	<p>1. Good inter-observer agreement (IOA) (79%-91.7%)</p> <p>2. Consultations provided and adjusted throughout the implementation</p> <p><u>Weaknesses</u></p> <p>1. Small sample size for teachers and students</p> <p>2. No control group</p> <p>3. Potential selection bias (i.e. participants were volunteers)</p>

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			Sample	Design, data collection and analysis		
		promise of this approach, the current study lengthens the training (from one to two days), includes a larger number of participants (from six to 14), and adds a new academic component related to the development of early literacy.				
4	Fabiano et al. (2013) US	A comparison of workshop training versus intensive, experiential training for improving behaviour support skills in early educators.  To compare two approaches to professional development in effective classroom management using positive behavioural supports.	88 teachers.	1. Randomised controlled design 2. The study compared two different training approaches: (1) a one-day classroom-based workshop that introduced effective preventative and behaviour support strategies followed by school year behavioural consultation support; and (2) an intensive package that included the one-day workshop plus four days of experiential learning and practice in a preschool classroom followed by school year behavioural consultation support. 88 teachers/aides were	Results indicated that on observing effective behavioural management and instructional learning formats, teachers in the intensive condition improved proximally, with effects waning over time. For measures of teacher use of praise, the intensive group maintained the improved rate throughout the school year more successfully than the workshop group. Rates of commands	<u>Strengths</u> 1. Random assignment or allocation of participants 2. Use of matched pairs in participant allocation 3. Sufficient sample size 4. Control was attempted to maximise internal validity 5. Standardisation and quality control of training 6. Three follow-up measurements

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
				randomly assigned to one of the two training conditions, and training occurred in August before the commencement of the school year.	and observations of classroom productivity were not different between groups. Teachers were satisfied with both approaches to training.	<u>Weaknesses</u> 1. Participants were not blind to the intervention 2. Use of compensation could threaten internal validity 3. Dropout rate (18-19%)
5	Finch et al. (2012) Australia	Impact of a population-based intervention to increase the adoption of multiple physical activity practices in centre-based childcare services: a quasi-experimental effectiveness study.  To describe the impact of an intervention on increasing the adoption of multiple policies and practices to promote physical activity in centre-based childcare and managers' knowledge.	Childcare services (n =228) in New South Wales (NSW), Australia.	1. A quasi-experimental design 2. The study was conducted in centre-based childcare services (n=228) in New South Wales (NSW), Australia; this involved a three-month intervention to increase the adoption of eight practices within childcare services that have been suggested to promote child physical activity. Intervention strategies to support the adoption of practices included staff training, resources, incentives, follow-up support and performance monitoring and feedback.	Compared with the comparison area, the study found significantly greater increases in the prevalence of intervention services with a written physical activity policy, with policy referring to placing limits on small screen recreation, and with staff trained in physical activity. In addition, non-significant trends towards a greater increase in the proportion of	<u>Strengths</u> 1. Use of quasi-experimental design with a control group 2. Sufficient sample size for both experiment and control groups  <u>Weaknesses</u> 1. Non-randomised assignment of participating centres 2. Only two staff from each centre were involved in the training 3. Lack of control for internal validity

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
				Randomly selected childcare services in the remainder of NSW acted as a comparison group (n=164); they did not receive the intervention but may have been exposed to a concurrent NSW government healthy eating and physical activity initiative. Self-reported information on physical activity policies, fundamental movement skills sessions, structured physical activity opportunities, staff involvement in active play and provision of verbal prompts to encourage physical activity, small screen recreation opportunities, sedentary time and staff trained in physical activity were measured by telephone survey with childcare service managers at baseline and 18 months later.	intervention services conducting daily fundamental movement skill sessions, and such services having a physical activity policy supporting physical activity training for staff, were also evident. The intervention was effective in improving a number of centre-based childcare service policies and practices associated with promoting child physical activity. Adoption of a broader range of practices may require more intensive and prolonged intervention support.	4. One-point only follow-up measurement at 18 months prevented trend analysis and made it difficult to interpret study results
6	Fukkink and Lont (2007)	Does training matter? A meta-analysis and review of caregiver	17 studies.	1. Meta-analysis 2. A review of studies published between 1980	Experimental results from the meta-analysis were	<u>Strengths</u> 1. Meta-analysis of 17 experimental

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	Netherlands	training studies.		and 2005 shows a significant positive effect of specialised training in competency for caregivers in childcare ( $d=0.45$ , S.E.=0.10).	significantly smaller for settings with no fixed curriculum content, delivery of the training at multiple sites and large-scale programmes. Results were also smaller when tests were used that did not align closely with the content of the training. Furthermore, experimental results were smaller for the skills domain than for the knowledge and attitude domain. A subset of experiments with both caregiver and child data also showed a positive effect, supporting the causal link between caregiver training, caregiver competencies and child behaviour in childcare, although	<p>studies</p> <p>2. Clear and transparent methodological procedures</p> <p>3. Adequate descriptions of individual studies</p> <p>4. Provision of narrative review of studies not included in the meta-analysis</p> <p>5. Use of meaningful coding which is useful for designing effective training characteristics (i.e. fixed vs. not fixed; one-site vs. multi-site)</p> <p><u>Weaknesses</u></p> <p>None.</p>

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
					this effect was not significant due to the small number of studies ( $d=0.55$ , $S.E.=0.30$ ).	
7	Fukkink and Tavecchio (2010) Netherlands	Effects of Video Interaction Guidance (VIG) on early childhood teachers.  To study the effectiveness of VIG training for teachers in early childhood education and care.	95 teachers were involved in the study (n=52 for the experimental group, n=43 for the control group).	1. Two group pre-test/post-test design 2. The study showed that a video feedback intervention improved the interaction skills of early childhood education and care teachers. The teachers who had received the Video Interaction Guidance training appeared more stimulating in their behaviour, were more sensitive and more verbally stimulating than teachers in the control group. The results were still apparent three months after training. An analysis of the behaviour of teachers at micro-level also revealed positive outcomes.	These findings show that video feedback training for early childhood educators is a promising method for increasing their socio-emotional support and verbal stimulation in childcare practice.	<u>Strengths</u> 1. Sufficient sample sizes for both the experimental and control groups <b>2. Participants'</b> characteristics from both control and experimental groups were very similar 3. Use of technology-assisted training (i.e. VIG) <u>Weaknesses</u> 1. Use of non-randomised group assignment 2. High dropout rate in experimental group (17.30%) 3. Researcher did not <b>present teachers'</b> characteristics
8	Fuligni et al. (2009) US	Diverse Pathways in Early Childhood Professional	103 early educators: public preschool teachers	1. Descriptive study. 2. Non-random purposive sampling. Used	A set of linkages between type of early education setting,	<u>Strengths</u> 1. The study highlighted the need

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		Sample	Design, data collection and analysis		
	<p>Development: An Exploration of Early Educators in Public Preschools, Private Preschools, and Family Child Care Homes.</p> <p>To explore patterns of formal education and training, as well as mentoring and supervision, in a diverse sample of early educators serving low-income preschool-age children in Los Angeles County, California.</p>	(n=42), private preschool teachers (n=42), family childcare providers (n=19).	questionnaires, observation.	<p>professional development, and supervision of teaching. Public preschools have the strongest mandates for formal professional development and typically less variation in levels of monitoring, whereas family child care providers on average have less formal education and more variability in their access to and use of other forms of training and mentorship. Four distinct patterns of formal education, child development training, and ongoing mentoring or support were identified among the educators in this study.</p> <p>Associations between professional development</p>	<p>for high supervision and mentoring of low-education level teachers and specialised training for early childhood teachers from all educational backgrounds</p> <p><u>Weaknesses</u></p> <ol style="list-style-type: none"> <li>1. Non-experimental study</li> <li>2. Small sample size (for descriptive study) which prevented generalisation</li> <li>3. Use of non-random (purposive) sampling</li> </ol>

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		Sample	Design, data collection and analysis		
				experiences and <b>teachers' beliefs and practices</b> suggest the importance of higher levels of formal training for enhancing the quality of teacher-child interactions. The different pathways to education and training are mostly related to beliefs about children and the emotional quality of interactions with children. Findings point to the importance of the BA in family childcare to enhancing more authoritative or democratic beliefs about children, and the importance of child development training at the BA level to improving <b>teachers' provision of</b> a positive emotional climate.	
9	Girolamett	Training daycare staff	16 early childhood	1. Experimental design	At post-test, the <u>Strengths</u>

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
10	o et al. (2003) Canada	to facilitate children's language.	educators who worked in four licensed nonprofit daycare centers in the metropolitan area of Toronto.	(Two group pre-test/post-test design) 2. The study used a pre- and post-test control group design with random assignment to experimental and control groups. Childcare providers in the control group were assessed at pre-test and post-test using the same procedures as the experimental group, and they participated in the in-service training programme once the post-tests were concluded.	experimental group waited for children to initiate, engaged them in turn-taking, used face-to-face interaction, and included uninvolved children more frequently than the control group. In turn, children in the experimental group talked more, produced more combinations, and talked to peers more often than the control group. The results support the viability of this training model in early childhood education settings and suggest directions for future research.	<u>Strengths</u> 1. Use of experimental design 2. Use of control group 3. Good inter-rater reliability in the measurement <u>Weaknesses</u> 1. Pseudo-randomisation of participants (i.e. childcare centres were randomly allocated but teachers were not). Children were not randomly assigned to the teacher 2. Small sample size of teachers (i.e. 16 for both groups) 3. The childcare providers in the experimental group were older and more experienced than the control group 4. Potential Hawthorne effect due to VDO taping
10	Girolamett	The effects of verbal	17 caregivers.	1. Experimental design	At post-test, the	<u>Strengths</u>

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
	o et al. (2004) Canada	<p>support strategies on small-group peer interactions.</p> <p>To investigate whether childcare providers could learn to facilitate peer interactions by using verbal support strategies (e.g., prompts, invitations, or suggestions to interact) during naturalistic play activities.</p>		<p>(Two group pre-test/post-test design)</p> <p>2. 17 caregivers were randomly assigned to experimental and control groups, stratified by centre so that staff from one centre could attend the training programme together. The experimental group received in-service training on how to facilitate peer interaction; the control group received training on adult-child communication strategies. Caregivers in the experimental group were taught to facilitate children's interactions with their peers by using indirect referrals (e.g., alerting children to situational information, offering praise) and direct referrals (e.g., telling a child what to say to a peer, inviting children to play together).</p>	<p>caregivers in the experimental group used more verbal supports for peer interaction than the caregivers in the control group. Specifically, they used more utterances to promote communication between peers. Children in the experimental group initiated interactions with peers more often and engaged in extended peer sequences more often than the children in the control group.</p> <p>Clinical implications: the results support the viability of this training model in early childhood education settings and suggest that future research into its effects on children with disabilities is</p>	<p>1. Use of experimental design</p> <p>2. Use of control group</p> <p>3. Good inter-rater reliability in the measurement</p> <p><u>Weaknesses</u></p> <p>1. Pseudo-randomisation of participants (i.e. childcare centres were randomly allocated but teachers were not). Children were not randomly assigned to the teacher</p> <p>2. Small sample size of teachers (i.e. 17 for both groups)</p> <p>3. Potential Hawthorne effect due to VDO taping</p>

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
					warranted.	
11	Grace et al. (2008) US	Impact of professional development on the literacy environments of preschool classrooms.  The major goal of the study was to assess the effects of ongoing professional development as a support system for preschool teachers and paraprofessionals who were attempting to create high-quality, literacy-rich classroom environments.	40 classroom/teacher units, representing 14 preschool centres, participated in the study (treatment group n=20; control group n=20).	1. Experimental design (Two group pre-test/post-test design)  2. This longitudinal study examined the effects of a comprehensive professional development programme on literacy environments of preschool classroom/teacher units. The Early Language & Literacy Classroom Observation Toolkit (ELLCO) was used to assess effects of treatment.	The treatment group of classroom/teacher units received mentoring by early childhood specialists, professional development training and literacy materials. The control group of classroom/teacher units received literacy materials. Both the treatment and control groups of classroom/teacher units received Read Together, Talk Together kits along with training in use of the kits. The ELLCO measure was administered twice a year in treatment and control classroom/teacher units by qualified teams of assessors, via a subcontract arrangement with a university.	<u>Strengths</u> 1. Randomised assignment of sample (i.e. classroom/teacher units) 2. Control group used for between-group comparison 3. Use of longitudinal design (over three years) 4. Sufficient sample size for both control and treatment groups 5. Good external validity <u>Weaknesses</u> 1. High attrition rate (25%) in the control group 2. Not possible to identify particular components of the programme that contributed the most to the outcomes

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		Sample	Design, data collection and analysis		
				Educational researchers served as external evaluators for the study. The data were analysed using multivariate repeated measures of analyses of variance. Statistically significant ( $p < .001$ ) effects were found for Group, Time and Group by Time interactions. All associated multivariate partial eta-squares exceeded .60, indicating strong effects. Also, follow-up univariate analyses of variance indicated that all Group, Time and Group by Time interactions were statistically significant ( $p < .001$ ), with associated univariate partial eta-squares ranging from .26 to .72. Group	

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
					means across the six measurements indicated little or no gain in classroom literacy environment means for the control group of classroom/teacher units, but substantial gains were made in the means for the treatment group of classroom/teacher units over the same period of time.	
12	Gross et al. (2003) US	Parent training of toddlers in daycare in low-income urban communities.	208 parents and 77 teachers of two to three-year-olds in daycare centres serving low-income families of colour in Chicago.	1. Experimental design (Two group pre-test/post-test design) 2. The authors tested a 12-week parent training programme. Eleven centres were randomly assigned to one of four conditions: (1) parent and teacher training (PT+TT), (2) parent training (PT), (3) teacher training (TT) and (4) waiting list control (C). After controlling for parent stress, PT and PT+TT parents reported higher self-efficacy and less coercive discipline and were	Among toddlers in high-risk behaviour problem groups, those in the experimental conditions showed greater improvement than the controls. Most effects were retained one year later. Benefits were greatest when parents directly received training.	<u>Strengths</u> 1. Use of representative samples 2. Sufficient sample sizes 3. Use of longitudinal design with measurements at four time points 4. Intensive intervention in terms of length and duration of intervention (i.e. 2 hours for 12 weeks)

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
				observed to have more positive behaviours than C and TT parents.		<p>5. Use of blind assessments</p> <p><u>Weaknesses</u></p> <ol style="list-style-type: none"> <li>1. Recruitment on a voluntary basis</li> <li>2. Non-randomised assignments</li> <li>3. Use of financial incentives as motivation for participation</li> <li>4. High attrition rates (21.2% for parents and 31.2% for teachers)</li> </ol>
13	Helker and Ray (2009) US	<p>Impact of child-teacher relationship training on <b>teachers' and aides' use</b> of relationship-building skills and the effects on student classroom behaviour.</p> <p>To assess the impact that CTRT has on <b>teachers' and aides'</b> use of relationship-building skills in the classroom, maintenance of the use of these relationship-</p>	12 teacher aide dyads (n=24), 32 preschool-age children.	<ol style="list-style-type: none"> <li>1. Quasi-experimental design.</li> <li>2. Purposive sampling. <ul style="list-style-type: none"> <li>- The Child Behaviour Checklist Caregiver Teacher Report Form (C-TRF).</li> <li>- The Child Teacher Relationship Training was created by using the Play Therapy Skills Checklist (CTRT-SC).</li> <li>- Videotaped play sessions.</li> <li>- Observation.</li> </ul> </li> </ol>	<ul style="list-style-type: none"> <li>- Teachers and aides in the treatment group learned and used CTRT relationship-building skills more frequently than teachers and aides in the active control group.</li> <li>- Teachers and aides in the treatment group maintained the use of CTRT relationship-building skills 10 weeks following the</li> </ul>	<p><u>Strengths</u></p> <ol style="list-style-type: none"> <li>1. Use of longitudinal experimental design with measurements at four time points</li> <li>2. Use of teacher/child dyads</li> <li>3. Good inter-rater reliability (i.e. 76%-93%)</li> </ol> <p><u>Weaknesses</u></p> <ol style="list-style-type: none"> <li>1. Use of non-randomised assignment</li> <li>2. Small sample size</li> </ol>

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
		building skills, and the impact that the use of these skills has on <b>children's internalising</b> , externalising and total behaviour problems.			completion of participation in CTRT. - Teachers maintained and utilised their skills at a 10-week follow up after intervention; this is noteworthy. - CTRT is an effective means for teaching relationship-building skills to teachers and aides, and facilitates <b>teachers' and aides'</b> abilities to generalise the use of relationship-building skills to the general classroom environment.	3. Potential Hawthorne effect during VDO taping and observation
14	Lee et al. (2006) Korea	Differential effects of <b>kindergarten teachers'</b> beliefs about developmentally appropriate practice in their use of scaffolding following in-service training.  To compare the scaffolding skills of	242 kindergarten teachers; 30 DAP and 30 DIP teachers were selected. 30 (15 DAP, 15 DIP) kindergarten teachers attended the training programme while 30 (15 DAP, 15 DIP) comparison	1. Experimental design 2. Among the 80 kindergarten teachers who participated in Study I, 20 teachers did not want to participate in Study II for various reasons (mainly lack of time); only 60 teachers (30 DAP, 30 DIP teachers) remained in Study II. They were randomly	Before the training, there was no significant difference between <b>DAP teachers' scaffolding and DIP teachers'</b> scaffolding. However, DAP teachers made significantly greater gains on a scaffolding measure	<u>Strengths</u> 1. Use of experimental design 2. Sufficient sample size 3. Use of between-group and within-group comparisons 4. Good inter-rater reliability (i.e. 82.6% on intervention level)

No · Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
		Sample	Design, data collection and analysis		
	Korean teachers identified as believing scaffolding to be developmentally appropriate practice (DAP) or inappropriate practice (DIP) before and after an in-service training experience.	kindergarten teachers did not.	assigned to either a treatment group (15 DAP and 15 DIP teachers) or control group (15 DAP and 15 DIP teachers). Teachers assigned to the treatment group participated in a one-month teacher training course. The teacher training was held once a week and lasted for about two hours. Teachers assigned to the control group did not participate in any teacher training programme. Teachers interacted with the same children as in Study I. The training programme was designed to help teachers gain a better understanding of the concrete teaching skills and strategies for scaffolding and translate this understanding into the practical application of scaffolding in their instruction. Teachers were instructed in: (1) theoretical review on <b>scaffolding (Vygotsky's approach to learning and</b>	than DIP teachers after teacher training which provided scaffolding skills and strategies.	and 80.0% on success level) <b>Weaknesses</b> 1. Use of non-randomised assignment 2. High attrition rate for Study II (i.e. 25%)

No ·	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
				development). (2) scaffolding strategy (preparation for using scaffolding strategy, strategies of successful scaffolder). (3) process of scaffolding (whole process of scaffolding, steps of scaffolding, contingent regulation).		
15	Perels et al. (2009) Germany	This study tested the effects of self- regulation training for kindergarten teachers concerning their own self-regulation and methods of fostering self-regulation in the children of preschool age whom they were teaching.	In this study, 35 German kindergarten teachers and 97 children participated. All adult participants were graduated kindergarten teachers.	1. Experimental design 2. The kindergarten teachers were tested with a questionnaire two weeks before and after the training. At the same time, the preschoolers were interviewed. A waiting control group design was applied.	The results obtained by means of analyses of variance show that the self-regulation of the kindergarten teachers, as well as the self-regulated learning of preschoolers whose kindergarten teachers took part in the training, improved significantly. The results indicate that it is possible to improve self- regulated learning of preschool children by a training programme for	<u>Strengths</u> 1. Use of experimental design (i.e. waiting control design) 2. Sufficient sample size (for children) <u>Weaknesses</u> 1. Non-randomised assignment of participants (i.e. teachers) 2. Small sample size (i.e. teachers)

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
16	Pianta et al. (2008) US	Effects of web-mediated professional development resources on teacher-child interactions in pre-kindergarten classrooms.  To describe effects of MyTeachingPartner (MTP), a web-based system of professional development resources, that included video exemplars and web-mediated consultation on specific dimensions of interactions with children.	113 teachers in a state-funded prekindergarten programme.	1. Experimental design 2. Random Questionnaires, observation, video clips, videotapes.	The result showed significantly greater increases in independent ratings of the quality of interactions than for those only granted access to a website with video clips. The positive effects of consultation were particularly evident in classrooms with higher proportions of children who experienced economic risks.	<u>Strengths</u> 1. Use of longitudinal experimental design with control group 2. Sufficient sample size 3. Inter-rater reliability was ensured 4. Follow-up measurements at multiple time points <u>Weaknesses</u> 1. Non-randomised assignment of teachers 2. Decreased external validity due to voluntary recruitment of participants
17	Potter and Hodgson (2007) UK	Nursery nurses' reflections on Sure Start training to enhance adult child interaction. The study explores the impact of a training approach designed to	Five staff working within a Sure Start programme in the north of England.	1. Descriptive/exploratory. Convenience. 2. Video clip, interview, focus group.	Nursery nurses can and do engage in high levels of critical reflection when effective training strategies are employed and such reflection has the	<u>Strengths</u> 1. Use of qualitative approach to gauge <b>nurses' reflective</b> practice <u>Weaknesses</u> 1. Very small sample

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
		improve both the reflective practice and knowledge of nursery nurses in the area of adult child interaction (ACI).			potential to deliver important improvements in practice in key areas.	size 2. Data under-analysed, no themes or categories identified
18	Raver et al. (2008) US	Improving preschool classroom processes: Preliminary findings from a randomised trial implemented in Head Start settings. To test whether intervention services could significantly <b>improve teachers'</b> ability to provide positive emotional support and well-structured classroom management in their classrooms.	18 Head Start sites, which included 35 classrooms led by 94 teachers who served 602 children.	1. Experimental design: a clustered randomised controlled trial (RCT) design. 2. Longitudinal design, randomised. 3. Observation. 4. Questionnaires.	Intervention classrooms have statistically significantly higher levels of positive classroom climate, teacher sensitivity, and behaviour management than classrooms in the control condition (with effect sizes ranging from $d=0.52$ to 0.89)	<u>Strengths</u> 1. Longitudinal experimental design 2. Randomised assignment of participants 3. Control was maximised 4. Blind assessments were used 5. Sufficient sample sizes (teachers and children) <u>Weaknesses</u> 1. Threats to internal validity due to existing activities in operation during the study
19	Rhodes and Hennessy (2000) UK	The effects of specialised training on caregivers and children in early-years settings:	16 caregivers attended the training course; 17 comparison	1. Non-equivalent control group design 2. Both the training and comparison caregivers and	Caregivers who received training made significant gains in positive	<u>Strengths</u> 1. Use of experimental design (i.e. non-equivalent

No .	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
		An evaluation of the foundation course in playgroup practice.  To examine the effects of a 120-hour preschool training <b>course on caregivers'</b> behaviour and <b>children's development</b> in early-years settings.	caregivers were assessed on a measure of caregiver sensitivity in the childcare centres in which they were employed.  68 children, two from each centre, were assessed for social and cognitive competence.	children were observed before and after the former group attended the training course. A pre- and post-test control group design without random assignment or what is commonly called a ' <b>nonequivalent</b> ' control group design.	relationship and decreased in levels of detachment. The children in their care made significant gains in complex social and cognitive play from pre- to post-training. The comparison group of adults and children showed no significant improvements from pre- to post-test.	control group design) 2. Sufficient sample sizes <u>Weaknesses</u> 1. Non-random assignment of participants 2. Assessments were not blind
20	Thornton et al. (2009) US	The Impact of an Ongoing Professional Development Program on Prekindergarten <b>Teachers' Mathematics</b> Practices.  To build on this exploration, and to begin establishing a mathematical foundation, early childhood educators must not only be knowledgeable about mathematical concepts themselves, they must	126 randomly-selected early childhood educators who voluntarily participated in a professional development programme entitled C3 Coaching over a two-year period.	1. One-group pre-test/post-test design 2. Teachers participated in ongoing professional development sessions with university-based coaches and individuals who specialised in early childhood education, special education or bilingual education. Bimonthly, teachers met first in small groups with their coaches for 1.5 hours and then individually with coaches in subsequent weeks. Coaches	After both pre- and post-tests were completed, data from 97 teachers who completed both parts of section one of the survey were analysed. A total of 13 items were evaluated using t-tests. Although 97 teachers completed both the pre- and post-tests, a few teachers failed to completely answer all 13 items that were analysed in this	<u>Strengths</u> 1. Use of experimental design (one-group pre-test/post-test design) 2. Sufficient sample size <u>Weaknesses</u> 1. No control or comparison group 2. High dropout rates (i.e. 20-23%)

No · Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
		Sample	Design, data collection and analysis		
	also understand the appropriate concepts to teach at each grade level and be aware of the most developmentally appropriate ways in which to teach mathematical concepts to young children.		were charged with providing teachers with information and research on child development, state and national standards and research-based information pertaining to instructional practices. Meetings addressed the development of oral language skills, phonological awareness, print awareness, alphabetic knowledge, numeracy skills and social/behavioural skills in young children. During each small group session, teachers had opportunities to reflect and collaborate with one another and with their coach. In addition, coaches met individually with teachers in their classrooms twice monthly. During this time, they modelled lessons for teachers, answered questions, problem-solved, and observed the teachers and students. Final assessments in mathematics and literacy were completed by teachers	study. For each of the 13 items analysed, between 80 and 83 valid responses were reported. Teachers reported - positive changes in math practices. - a stronger alignment to national mathematics standards and increased awareness pertaining to developmentally appropriate mathematics practices as they apply to early childhood classrooms. - a shift towards more hands-on activities and a shift away from the use of worksheets in their prekindergarten classrooms.	

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
				following their participation in the ongoing professional development provided by C3 Coaches.		
21	Wasik et al. (2006) US	The effects of a language and literacy intervention on Head Start children and teachers.  To train teachers on how to increase opportunities for language and vocabulary development in young children.	16 teachers (10 in the intervention group and six in the control group), 207 children (139 in the intervention group and 68 in the control group).	1. Experimental design 2. A language and literacy intervention was implemented in 10 Head Start classrooms. Teachers were trained in specific book reading and conversation strategies. Two centres were randomly assigned to the intervention and control conditions. The same 16 teachers who began the project in the autumn completed it in the spring. The directors of the two centres were informed that one centre was going to be picked as the intervention centre and one as the control site. The control centre was given a list of the books used in the intervention sites and a stipend to purchase the books as well as additional titles. Order forms indicated that the control group used the same titles that were	At the end of the year, children in the intervention classrooms performed significantly better than children in the control classrooms on the Peabody Picture Vocabulary Test-III and the Expressive One-Word Vocabulary Test (3rd ed.). In addition, teachers in the intervention classrooms used strategies that promoted language development during book reading and other classroom activities. Head Start teachers can be trained to implement strategies that have positive effects on children's language	<u>Strengths</u> 1. Use of experimental design 2. Large sample size for children <u>Weaknesses</u> 1. Non-random assignment 2. Small sample size for teachers

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
				used in the intervention group. In addition, during classroom visits to the control sites, observers saw that the books were displayed and being used by the control teachers.	and literacy development	
22	Whiteley et al. (2005) UK	Empowering early-years workers to identify and target areas of difficulty in pre-school children.  Aimed at providing skills and resources to support nursery staff in identifying areas of strength and need in three to five-year-old children.	The six participating nurseries were all in areas of high socioeconomic disadvantage.	1. One-group pre-test/post-test design. 2. Staff were trained to administer, score and interpret a wide-ranging screening inventory.  Following the assessment of children at nursery entry, staff were given support in developing appropriate programmes of activities to address the weaknesses and build on the strengths identified for individual children.	All the children were reassessed following a period of six months. Although time was a major issue, staff were generally positive about the screening process and recognised the worth of early identification and intervention.  While 46% of 173 children screened at the start of the project had significant difficulties in some area of development, only 6.9% remained at risk on the screening measure following tailored input.  Systematic screening was identified as	<u>Strengths</u> 1. Large sample size <u>Weaknesses</u> 1. Improvement in child development may be due to maturation (not the intervention per se)

Appendix 2.8

No · Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
		Sample	Design, data collection and analysis		
				important for alerting staff to difficulties that might otherwise go unnoticed.	

## Appendix 2.9: Overview of all Thai Articles

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
1	Chotsuwan (2007)	<p>The effects of organising non-formal education activities to enhance <b>caregivers' performance</b> in child development centres under the Sub-District Administrative Organisations in Chantaburi province.</p> <p>1) To study the pre- and post-knowledge of non-formal education activities in enhancing <b>caregivers' performance</b> in child development centres under the Sub-District Administrative Organisations in Chantaburi province, focusing on four aspects of knowledge: knowledge of preschool <b>children's development</b> and learning, knowledge of preschool <b>children's development</b> in evaluation, knowledge of producing and applying</p>	40 caregivers in child development centres under Sub-District Administrative Organisations in Chantaburi province.	<p>1. Quasi-experimental design</p> <p>2. The non-formal education activities were based on <b>Knowles' concepts</b>.</p>	<p>The research findings were as follows:</p> <p>1. The knowledge scores of performance after joining in non-formal education activities to <b>enhance caregivers' performance</b> highly increased from the knowledge scores before the activities, at a significant level of 0.05.</p> <p>2. An evaluation of the <b>participants' opinions</b> revealed that they reported that curriculum, activities, and administration management were appropriate.</p>	<u>Strengths</u> <p>1. Use of quasi-experimental design with pre-post-test design</p> <p>2. The two-days of training were based on <b>Knowles' concepts</b> (adult learning theory).</p> <u>Weaknesses</u> <ul style="list-style-type: none"> <li>- No control group</li> <li>- Content, activities and management appropriate for the study setting may limit generalisation</li> </ul>

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
		learning materials in <b>preschool children's</b> learning, and knowledge of relation-building among family, child development centres and community. 2) To evaluate the effects of organising non-formal education activities to <b>enhance caregivers'</b> performance in child development centres under the Sub-District Administrative Organisations in Chantaburi province.				
2	Chutchaipol rut (2011)	Personnel development at a child development centre in Banphai Municipality, Khon Kaen province.  To study the procedures/methods and the outcome of personnel development at a child development centre (CDC) in Banphai Municipality, Khon Kaen province.	Phase 1: 246 participants. (73 Head of childcare centres, 144 parents)  Phase 2: 17 participants (intervention group)	The method of this study was Participatory Action Research (PAR) conducted at three Banphai Municipal CDCs, Banphai, Khon Kaen Province. The research was divided into two phases: 1) preparation, 2) a participatory action	1. The current condition, procedure/methods of personnel development in the CDC of Banphai Municipality and process of staff recruitment were limited under the local <b>policy, 'Strengthening families, strong communities'</b> . Most personnel did not meet the requirements. Lack of personnel development awareness	<u>Strengths</u> - Appropriate for the study setting - Contemporary programme - Involved many stakeholders and participants <u>Weaknesses</u> - Test and content of programme may not be aligned

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
				research in personnel development.	<p>programme as a whole, and lack of knowledge and understanding for the provision of education and experience. Learning experience of children, including the lack of a suitable learning environment within the CDC. Exploring the problem and realisation using the Appreciation Influence Control (AIC) and also using these four intervention activities: Knowledge Management (KM), Dialogue, Appreciative Inquiry (AI) and Deep Listening.</p> <p>2. From the personnel development outcome, the researcher gained knowledge and understanding of how to create a school development plan, internal quality assurance, clinical supervision, classroom</p>	

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
					research, integrated learning activities, and child-centred learning plan. Moreover, the research took a good attitude. It made the teaching and child-centred learning activities easy to develop. The teaching and learning activities moved in the same direction, causing a change for the better. The teachers could use many different evolution techniques which evaluated both teachers and students. The implementation of this research created three levels of change: personal level, group level and organisation level, with development of an internal quality assurance system. The CDC planned to develop partnerships and involve more stakeholders.	

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
3	Kanjanaleas porntawee (2010)	<p>The development of orientation training packages for child <b>attendants</b> on 'The Role and Duty of Child Attendants' under local government organisations in Ban Pong District, Ratchaburi Province.</p> <p>The purpose of this research was: 1) To develop the orientation training packages for child <b>attendants</b> on 'The role and duty of child <b>attendants</b>' with an efficient standard criterion of 80/80. 2) To compare the pre-test and post-test achievement score on the developed orientation training packages. 3) To study the child <b>attendants</b>' comments on the training package.</p>	30 child attendants in Ban Pong district, Ratchaburi province.	<p>1. One-group pre-post-test design 2. Participants were selected by using a cluster sampling technique. The instrument consisted of 1) a structured interview form, 2) an orientation training package developed by the researcher, 3) an achievement training test and 4) a <b>trainers'</b> comment questionnaire.</p>	<p>1) The efficiency of orientation training packages of child <b>attendants</b> on 'The role and duty of child <b>attendants</b>' met the efficient standard criterion of 80.72/82.89. 2) The <b>trainers'</b> training achievement score in the experimental group, after practicing with the orientation training packages, was significantly higher than the pre-test at the .05 level. 3) The child <b>attendants</b>' comments on the developed orientation training packages were favourable.</p>	<u>Strengths</u> <ul style="list-style-type: none"> <li>- Colourful document and distribution of CD for practice, self-study and review</li> </ul> <u>Weaknesses</u> <ul style="list-style-type: none"> <li>- Small sample size</li> <li>- May limit generalisation of the study</li> </ul>
4	Nakunsong	The development of a	13 childcare	1. Research and	1. Context evaluation (C)	<u>Strengths</u>

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
	(2009)	<p>training curriculum for trainers to develop the personnel of early childhood development centres in Sub-District Administrative Organisations (SAOs).</p> <p>To develop a training curriculum and assess the efficiency of the training curriculum for trainers in developing the personnel of early childhood development centres in SAOs.</p>	<p>workers in early childhood development centres in SAOs, Maha Sarakham province.</p>	<p>development methodology was employed.</p> <p>2. The research instrument was a constructed training package, and the training package was tried out by one group pre-and post-test design in the research stage.</p> <p>3. The training curriculum was then developed based on the research results, and the curriculum was tried out in the development stage.</p> <p>4. The CIPP model proposed by Daniel L. Stufflebeam was employed to assess the efficiency of the curriculum.</p>	<p>The data obtained from the experts during the context evaluation revealed that the objectives of the training course were to provide trainers with knowledge, professional skills, positive attitudes and idea exchanges. The trainees were childcare workers from early childhood development centres run by SAOs, and <b>had at least five years'</b> work experience, having obtained a bachelor's degree in early childhood education or a related field. The training was held on four weekdays for 13 trainees at the meeting hall in the community area. The training covered eight topics based on both theoretical and practical aspects, including training analysis, training project preparation, trainers' lesson plan</p>	<p>- None</p> <p><u>Weaknesses</u></p> <ul style="list-style-type: none"> <li>- Small sample size</li> <li>- No survey to ascertain learning needs of participants</li> </ul>

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
					<p>preparation, training techniques, trainers' personality development, materials for training, training environmental management and evaluation after training.</p> <p>2. Input Evaluation (I)</p> <p>According to the input evaluation, the training topics and the training objectives, the objectives and the test were assessed by the experts for the index of item objective congruence (IOC). The results revealed that the IOC value of the two aspects, as a whole, was 0.75, which was higher than the acceptable IOC value. The experts' opinion of the training package, training management and results after training was high, showing the effectiveness of the training package for the next training stage. The</p>	

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
					<p>training package was then tried out with 15 childcare workers to test the efficiency value of the training package, which was 85.57/84.44% with a test reliability of .70 - .93.</p> <p>3. Process Evaluation (P)</p> <p>In the process evaluation, the training package was employed with 13 trainees. The efficiency value of the training package was 86.85/85.64, a higher efficiency value than the required criteria (80/80). When comparing the post-test with the pre-test scores of the trainees, it was found that the post-test scores were higher than the pre-test scores at the .05 level of significance. The mean score of the trainees in the practical aspect was 76.61.</p>	

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
					4. Product Evaluation (P) In the product evaluation aspect, four trainees were trained to act as trainers, teaching 15 inexperienced childcare workers. Under the researcher's close supervision, it was found that the trainees' theoretical and practical knowledge, as a whole, was at a good level. The trainees' opinion of the training management, as a whole, was high. The mean score of the trainees' theoretical test was 42, and the practical test was 11.07.	
5	Neamhom (2006)	Process development for the enhancement of <b>teachers' behaviours in promoting preschoolers' self discipline</b> using reflection and internalisation concepts.  1) To develop the process for the enhancement of	Eight preschool teachers (kindergarten) and 207 preschoolers at Phrasamut School, The Office of Samutsongkhram Educational Service Area.	The research method was five-stage: 1) developing the process, 2) a pilot study, 3) revising the process, 4) field testing and 5) refining and proposing the developed process.	1. The process for the enhancement of teachers' promotion of preschoolers' self-discipline by using reflection and internalisation concepts consisted of foundation concepts, objectives, contents, operational procedures and	<u>Strengths</u> - Informal suggestion for teacher to self-improve <u>Weaknesses</u> - Potential performance bias due to Hawthorne effect from VDO observation

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
		teachers' behaviours in promoting preschoolers' self-discipline by using reflection and internalisation concepts, 2) to study the effect of using the process to change teachers' behaviours in promoting preschoolers' self-discipline and 3) to study the effect of using the process to change preschoolers' self-discipline.			evaluation of the process. The three stages of operational procedures were 1) conducting positive relations and trust: engaging the process voluntarily, respecting the teachers and making an appearance as co-learner; 2) providing explicit knowledge about promoting preschoolers' self-discipline: training and using teacher behaviour in promoting preschoolers' self-discipline measurement; and 3) transforming explicit knowledge into virtual learning: teachers' reflections through dialogue journals and professional conversation, coaching through informal conversation and providing more knowledge as teachers needed, and teachers' independent operation. These elements affected	

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
					<p>teachers' internalisation in three ways: 1) open-minded acceptance, 2) whole-hearted reformation towards conceptualisation and organisation, and 3) responsive attribution.</p> <p>2. The post-test score for teachers' promotion of preschoolers' self-discipline in four areas - modelling, preparing learning experiences, child rearing and preparing the environment - was significantly higher than that of the pre-test at the .05 level.</p> <p>3. The post-test score on preschoolers' self-discipline in four areas - self-control, self-responsibility, public responsibility, and social manner performance - was significantly higher than that of pre-test at the .05 level.</p>	

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
6	Nosungnoe n (2011)	<p>Developing the potential of the child caretakers of Khoksanran Sub-District Municipality's Child Development Centre, Banhaet District, Khon Kaen Province.</p> <p>To investigate problems and approaches to developing the potential of the child caretakers, and to evaluate the development of the potential of the child caretakers of the Khoksanran Sub-District <b>Municipality's child</b> development centre in Ban Haet District in Khon Kaen Province.</p>	<p>13 operational officers who were working at the Khoksanran Sub-District <b>Municipality's child</b> development centre (five executives from the committee, eight child caretakers and 20 parents of children who were studying at the centre) in academic year 2010.</p>	<p>The methods for developing the potential of the child caretakers of the Khoksanran Sub-District <b>Municipality's child</b> development centre included organising a workshop for developing the potential of the child caretakers in terms of writing lesson plans and producing teaching materials. The research tools used in the study were an interview form, guide questions for a focus group discussion, a comprehension test on writing lesson plans before and after attending the workshop, an evaluation form for lesson plans, an evaluation form for</p>	<p>The result of the study in the problem analysis process, regarding problems with developing the potential of the child caretakers, showed that the learning experience plans of the Department of Local Administration were indeed used but not adjusted in accordance with the community's context. Moreover, the teaching materials were limited. In the operational planning process, workshops were prepared in order to develop the potential of the child caretakers in terms of writing lesson plans and producing teaching materials.</p> <p>In terms of monitoring and evaluating the performance of the child caretakers after attending the workshop, the mean of the test</p>	<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>- Fixed programme</li> <li>- Test and content of programme were aligned</li> </ul> <p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>- Small sample size</li> <li>- May limit generalisation of the study</li> <li>- No control group</li> </ul>

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
				the lessons, and a supervision form for organising the learning experiences of child caretakers.	score after attending the workshop of the child caretakers was higher than before attending the workshop and it was found that a month after attending the workshop, the child caretakers retained knowledge and understanding derived from the workshop in writing lesson plans covering all elements of the lesson plans, used various kinds of teaching materials/tools and equipment in accordance with the lesson contents and could teach according to the lesson plans at a good level, nearly 100%.	
7	Rujisatiensap (2003)	The development of pre-service caregiver training curriculum for promoting childhood development (0-5 years).  - To develop a pre-service caregiver training curriculum aimed at	- 15 key players (childcare experts, lecturers and academics) selected for interview.  - 113 caregivers in private low-	1. Survey research A case study of caregivers in private low-charge day-care services registered with the Department of Social Development and Welfare	The pre-service caregiver training curriculum was divided into 14 categories: role of childcare service, emotional quotient of caregiver, developmental psychology, assessment of preschool-aged child	<u>Strengths</u> - Programme content is useful for caregivers and children <u>Weaknesses</u> - 300-hour training programme may be too long for caregivers in the other setting to

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
		caregivers in private low-charge daycare services.  - To study the views of caregivers in private low-charge day-care services towards pre-service caregiver training curriculum implementation.	charge daycare services in Bangkok.	(Department of Public Welfare). 2. Methodologies employed were documentation, in-depth interviews and questionnaires.	development, instilling discipline and morals, experience of familiarisation, activity arrangement, pre-aged <b>children's playing</b> , learning media, material provision, toy-making and repairing, arranging environments, food and nutrition, illness and accident prevention, child development policy, basic laws and legal aspects. The 300-hour training involves creating awareness for caregivers, theoretical study and field practice. According to academics, the curriculum is compiled with pre-aged <b>children's development</b> in mind. Also, the caregivers in the private low-charge day-care agreed that this curriculum was highly applicable to daily practice.	participate
8	Sala (2010)	Development of	Eight childcare	1. Quasi-	The study found that,	<u>Strengths</u>

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
		<p>experiential learning plans for preschool children for the care providers of Phuphaman Tambon Administrative Organisation Preschool (TAO) Child Development Centre in Phuphaman District, Khon Kaen Province.</p> <p>To build the knowledge and understanding of teachers caring for preschool children in creating development experiences for preschoolers in early childhood development centres under the management of the Phuphaman TAO in Phuphaman District, Khon Kaen Province.</p>	providers from child development centres under the TAO.	<p>experimental design</p> <p>2. Methods included working meetings, allocation of tasks, supervision, observation and personal interviews.</p>	<p>prior to the working meetings, the preschool teachers were aware of experiential development learning, but lacked knowledge in conducting specific experiential learning activities, which resulted in gaps in the learning process. However, after the working meetings, it was found that teachers had increased knowledge and understanding of specific methods of experiential learning development.</p> <p>Using development methods to increase the knowledge of preschool teachers from child development centres under the TAO, including working meetings, delegation of tasks and supervision, resulted in improved knowledge among the teachers. The teachers also demonstrated an</p>	<p>None</p> <p><u>Weaknesses</u></p> <ul style="list-style-type: none"> <li>- Small sample size</li> <li>- May limit generalisation (appropriate for only the centre in the study)</li> <li>- No control group</li> </ul>

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
					<p>improved ability to plan the schedule and array of experiential development learning activities. This will help all students to maximise their learning potential.</p> <p>It was recommended that these development methods be implemented in a sincere and determined way. This would help elevate the capacity and effectiveness of the child development centres. There should be a review of the training curriculum on a regular basis, control and monitoring of use of the plan for experiential development for preschoolers in child development centres and development of data on preschool experiential learning that is appropriate and up-to-date so that this</p>	

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
					information can be disseminated to those who are interested and who want to apply the methods described in this study.	
9	Sompao (2007)	Using group activity to enhance the self-efficacy of child attendants in a <b>Preschool Children's Development Centre</b> , Mae Ram Sub-District Administrative Organisation, Mae Rim District, Chiang Mai Province.  To study the effect of using group activity on the self-efficacy of child attendants in a <b>Preschool Children's Development Centre</b> , Mae Ram Sub-District Administrative Organisation, Mae Rim District, Chiang Mai Province.	Nine child attendants in a <b>Preschool Children's Development Centre</b> , Mae Ram Sub-District Administrative Organisation, Mae Rim District, Chiang Mai Province.	1. One-group pre- and post-test experimental design. 2. The subjects participated in group process activities for two days. The instruments used included 12 activities for developing self-efficacy and a self-efficacy test. The researcher collected the data herself before and after the experiment and analysed them in terms of frequency distribution, percentage, means and standard	It was found that self-efficacy of child attendants insignificantly increased after participating in the experiment.	<u>Strengths</u> - Interested programme using variety of activities <u>Weaknesses</u> - Small sample size - May limit generalisation of study results

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
				deviation and t-test.		
10	Uraisawat (2005)	A comparative study of the effectiveness of childcare attendants who attended and did not attend the capacity building for early childhood care and development with participatory approach programme in Bang Pa-In district, Phra Nakhon Si Ayutthaya province.  To follow up eight months after the training programme study and compare the effectiveness of Child Care Attendants (CCA) who attended and did not attend the Capacity Building Program for Early Childhood Care Development with Participatory Approach focus on knowledge, attitude, practice, skill teaching, growth and	Six Child Development Centres were divided into two groups of three, with trained CCA and untrained CCA. Each group took care of 40 children.	1. Quasi-experiment study 2. With questionnaires, tests, and objective <b>observation</b> , CCAs' profile, knowledge, attitude, childcare practice and teaching skills were determined eight months after the training programme. <b>Children's growth</b> and development status were assessed one month after entering the centres and then again six months later. Parents and community leaders were interviewed to assess their participation and satisfaction. Percentage and t-	Trained CCAs who had low performance at baseline had better knowledge, attitudes and practices, particularly in teaching skills as shown in higher mean scores (K 74% 54%, A 82% to 73%, P 69% to 64% and T 93% to 62%). However, the difference was statistically significant only in knowledge mean scores (p-value = 0.01) Parents and community <b>leaders' involvement</b> and satisfaction with the centres was comparable in both groups. The most remarkable findings were in the improvement or favourable changes in <b>children's growth and</b> development among the trained group, which was poorer at the outset but showed higher improvement than those in the untrained group	<u>Strengths</u> - The pre-post-test (match paired) <u>Weaknesses</u> - Non-randomised allocation of participants - Improvement in child development may be due to maturation (not the intervention per se) - Small sample size - May limit generalisation of study results

No	Author(s) (Year) Country	Title Aim(s) of study	Methodological issues		Findings	Strengths and Weaknesses
			Sample	Design, data collection and analysis		
		child development, satisfaction and participation of parents, community and quality of Child Development Centres.		test were used in data analysis.	(25 to 13 scores).	

## Appendix 2.10:Developing Critical Appraisal Skills

The framework for appraisal provided by Parahoo (2006) was used to appraise the research. The framework consists of the following headings, based on the structure most often used to report quantitative studies in research journals. The headings are:

### 1. Title of study

Consider:

- Does the title convey the study clearly and accurately?
- From the title can I decide whether this paper is relevant to my practice?

### 2. Abstract

Consider:

- Does the abstract give a short and concise summary of the following aspects of the study?
  - Background
  - Aim
  - Designs
  - Results
  - Conclusions

### 3. Literature review/background

Consider:

- Is the importance of the study justified?
- What is the context of this study?
- Does the literature review show the gap/s in knowledge which this study seeks to fill?

### 3.1 Aims/objectives/research questions/hypotheses

Consider:

- Are the aims of the study clear?

### 4. Methodology or design

#### 4.1 Design of study

Consider:

- What is the design of the study? Is it the most appropriate for the aims of the study?
- Are the main concepts (to be measured) defined?
- What are the methods of data collection? Are they constructed for the purpose of the current study or do the researchers use existing ones?
- Who collected data? Can this introduce bias in the study?
- In studies where there are more than one group, is there a description of what intervention/treatment each group receives?
- Is the setting/s where the study is carried out adequately described?

- Who was selected? From what population were they selected? What was the precise method of selection and allocation? Was there a sample size calculation?
- Was ethical approval obtained? Are there any other ethical implications?

#### 4.2 Data analysis (for IH)

Consider:

- Was there a separate section in the paper that explained the planned analyses prior to the presentation of the results?
- Which statistical methods were relied on?
- Is it clear how the statistical tests were applied to the data and groups?

#### 5. Results

Consider:

- Are the results clearly presented?
- Are the results for all the aims presented?
- Are the results fully presented?

#### 6. Discussion and interpretation (including limitations)

Consider:

- Is it a balanced discussion? Has all possible explanations for the results given?
- Are the results discussed in the context of previous studies?
- Are the results fully discussed?
- Are the limitations of the study discussed?

#### 7. Conclusions/recommendations

Consider:

- Are the conclusions justified?
- Are there recommendations for policy, practice or further research?
- Are the results/conclusions helpful for my practice?
- Are the results generalisable?

#### Funding

Consider:

- Is there potential conflict of interest (if information on funding is provided)?

#### Conclusions

## Appendix 2.11: Example of a Completed Critical Appraisal Using the Parahoo (2006) Framework

Title: Whiteley, H. E., Smith, C. D. and Hutchinson, J. (2005) 'Empowering early years workers to identify and target areas of difficulty in pre-school children', *Early Years* 25 (2): 155-166.

1. Title of the study	<p>Does the title convey the study clearly and accurately?</p> <p>The title of this paper reflects empowering early-years workers (the population) to identify and target areas of difficulty in preschool children. Therefore the title contains only few the key components in this study. The title also identified the design of the study (intervention).</p> <p>From the title can I decide whether this paper is relevant to my practice?</p> <p>I am interested in how to improve Thai nursery workers by training, so this study is highly relevant to me.</p>
2. Abstract	<p>Does the abstract give a short and concise summary of the following aspects of the study?</p> <p><b>Background:</b> The abstract is a short summary of a study. It states briefly the aim of the study, sample, method and results. However, there is no information about background.</p> <p><b>Aim:</b> This project was aimed at providing skills and resources to support nursery staff in identifying areas of strength and needs in three to five-year-old children.</p> <p><b>Design:</b> The six participating nurseries were all in areas of high socioeconomic disadvantage. Staff were trained to administer, score and interpret a wide-ranging screening inventory. Following the assessment of children at nursery entry, staff were given support in developing appropriate activity programmes to address the weaknesses and build on the strengths identified for individual children. All the children were reassessed following a period of six months. Although time was a major issue, staff were generally positive about the screening process and recognised the worth of early identification and intervention.</p> <p><b>Results:</b> The results are briefly and clearly presented. 46% of 173 children screened at the start of the project had significant difficulties in some area of development; only 6.9% remained at risk according to the screening measure, following tailored input.</p>

	<p>Conclusions: Systematic screening was identified as important for alerting staff to difficulties that might otherwise go unnoticed. Further studies were not recommended to provide evidence. However, the authors did not comment on the evidence produced by this study.</p>
3. Literature review/ background	<p>Is the importance of the study justified? The authors justify the importance of this study by showing that good quality preschool provision can ameliorate the effects of disadvantage and help children to be better prepared for school. The staff worked hard and produced great improvements in the children during their time in nursery. However, the starting point for many children was so low that, even by the end of nursery, many were still unprepared for the challenge of reception class and scored low on baseline assessment at reception entry. The nursery schools wanted to be able to provide evidence of the progress of children in their care. They were also keen to explore new ways of working which might provide even greater benefits for the children.</p> <p>What is the context of this study? This study was carried out to implement a training programme in order to support the introduction of a programme of systematic screening into each of the nursery schools. The training would also focus on the effective use of assessment data to inform the planning of specific activities linked to individually tailored working. In consultation with school staff, a suitable assessment tool was identified, namely the Early Screening Inventory — Revised (ESI-R)</p> <p>Does the literature review show the gap/s in knowledge which this study seeks to fill? This tool allows a brief and yet reasonably comprehensive assessment <b>of a child's developmental progress and is suitable for children from three to six years of age.</b> The aim of the assessment is to determine whether a child may have a difficulty that will place them at risk for school failure. It is not meant to provide a definitive diagnosis of any specific condition; rather, it is <b>intended to survey a child's ability to acquire skills. Thus, poor performance on the ESI-R suggests the possibility of a delay or disorder in the child's potential for acquiring knowledge.</b></p> <p>Aims/objectives/research questions/hypotheses <b>Are the aims of the study clear?</b> The main aims of the study are clear: the overall aims of this project were to:</p> <ul style="list-style-type: none"> <li>- Address early-years development.</li> <li>- Focus on the prevention of difficulties through systematic screening and tailored intervention activities.</li> <li>- Help children to maximise their potential.</li> <li>- Provide an impetus for the development of new/imaginative teaching techniques to address identified problems.</li> <li>- Have a strategic impact on the nursery providers.</li> <li>- Provide a professional development opportunity for nursery staff.</li> <li>- Provide an individual record of progress for at-risk children from the start to the end of nursery.</li> </ul>

4. Methodology or design	<p><b>Design of study</b></p> <p>What is the design of the study? Is it the most appropriate for the aims of the study?</p> <p>Nursery staff were trained in one half-day session to administer, score and interpret the ESI-R assessment. The issue of inter-rater reliability was raised and discussed in relation to the three subtests (Copy forms, Draw a person and Verbal expression) that allowed for some subjectivity in scoring. Teachers spent some time scoring examples of responses to these tests and comparing scores in order to ensure high inter-rater agreement. They then screened all the children aged over three who were new to their nursery in that academic year. Screening at each school was only carried out when staff were confident that the children had settled into their new environment and were likely to be able to show their true potential when assessed. The parent questionnaire was also administered as appropriate. Data from the four Action Zone nurseries were gathered during the academic year 2001/02 and from the Sure Start area nurseries during 2002/03. Following the initial assessment of the children, staff were given further support in interpreting the results of screening in terms of patterns of strengths and weaknesses (a second half-day session). They were also given guidance in developing appropriate programmes of activities to address the weaknesses and build upon the strengths identified for individual children. This support was offered on an ongoing basis across a period of several weeks, during which a member of the project team was available to respond to questions and queries and to spend several hours providing support in each nursery. No specific intervention programmes were used. Rather, materials and ideas to support the development of strategies tailored to meet the needs of individual children were reviewed and modified appropriately. Thus, staff were empowered to develop their own, appropriately tailored activities by drawing on their existing knowledge and experience together with more specific guidance. In addition, staff in two of the schools (i.e. Sure Start schools) had taken part in Hanen training and the other four (EAZ) schools were committed to future training in a Talking Partners scheme. Both of these schemes are designed to develop skills in the areas of speech and language development, and staff felt that the ESI-R training would provide a focus for the application of their newly acquired knowledge and skills. It was the most appropriate programme for the aims of the study.</p> <p><b>Are the main concepts (to be measured) defined?</b></p> <p>The main concept measured was the development of language skills in children experiencing difficulties in that domain — reflecting the importance attached to language development by the staff involved. Questionnaires were administered to all staff involved in the project to assess their views, attitudes and feelings about the project.</p> <p><b>What are the methods of data collection? Are they constructed for the purpose of the current study or do the researchers use existing ones?</b></p> <p>The main instruments used in this study were two materials. Firstly, the Early Screening Inventory—Revised (ESI-R) takes about 15 to 20 minutes to administer and is used on an individual basis. Children aged four years or more are asked to complete extra activities within the assessment, in addition to those completed by younger children. The child screening measure is accompanied by a parent questionnaire that asks about the health, behaviour and progress of the child in the home environment. In spite of its brevity, the ESI-R is wide-ranging and provides an overview of development in three major areas covered by individual subsections within the assessment: Visual-motor adaptive (including fine motor skills,</p>
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	<p>eye-hand coordination, copying forms, visual short-term memory skills), Language and cognition (including language comprehension, verbal expression, ability to reason and count, auditory short-term memory), and Gross motor skills (jumping, hopping, balance, walking a straight line). Many of these skills relate to the Early Learning Goals outlined in the Curriculum Guidance for the Foundation Stage (QCA, 2000). While language and cognition are obvious targets for assessment, the importance of balance and coordination is often underestimated. An overall total score from the three ESI-R subsections produces a screening recommendation of Refer, Re-screen or OK, where Refer suggests that some specific intervention is needed and Re-screen suggests that the score may be unreliable and the process should be repeated or more information gathered. Due to time limitations experienced by the nursery staff in the project, Re-screen was always taken as meaning that some specialised classroom activities would be useful. The overall screening decision is based upon age-related scoring bands derived from standardisation with over 6000 children. In addition to the overall score, more detailed <b>information about a child's strengths and weaknesses can be gleaned by studying the performance on each subsection</b>. In this way, even a child with an overall recommendation of OK may have certain areas of weaknesses which may be targeted for development through tailored working. The ESI-R has very explicit administration and scoring guidelines and has a high established inter-rater reliability (<math>r=0.98</math> based on 544 tester-observer pairs). It also has a high test-retest reliability (<math>r=0.89</math> based on 86 test-retest pairs). The Clinical language intervention programme (CLIP: Semel &amp; Wiig, 1997) was introduced to staff as a source of activities to support the development and integration of language structure and meaning, and to help preschoolers to achieve communicative competence. This intervention programme provides a rich base of language activities designed to help develop skills in vocabulary, critical word and language structures, and semantic and linguistic concepts. The manual is divided into seven themed sections: All about me, My community, Transportation, Workers, Food and nutrition, Animals and Time. Each section is structured to provide a list of materials needed (which are generally available in any nursery), the targeted language structures, ideas for motivating the children to take part and specific, clearly planned activities. Reproducible worksheets are also included. Sources of information used specifically to support the development of fine and gross motor skills and balance included Early intervention in movement (Macintyre 2002) and Dyspraxia in the early years (Macintyre 2000). These sources describe a number of simple exercises that children can do in order to develop specific motor skills. For example, to develop gross motor skills: walking along a tape on the floor (straight, curved, etc.), jumping over, crawling under, climbing through (ropes/ hoops), rhythmical marching and stopping, and jumping into and out of hoops. Examples of exercises for the development of fine motor skills include: developing finger awareness using sand tracing, pouring, filling, siphoning, mixing and squeezing, moulding, construction with plastic bricks and manipulation of scissors. A brief questionnaire was designed for use with staff involved in the project to assess their views, attitudes and feelings about the training, the assessment, the intervention work and the programme as a whole.</p> <p>Who collected data? Can this introduce bias in the study? No information on who the data were collected or how to prevent bias.</p> <p>In studies where there are more than one group, is there a description of what intervention/treatment each group receives?</p>
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	<p>In this study, there was one group (173 children) and a description of what intervention the group received. However, there was no information about how to train nursery staff.</p> <p>Is the setting/s where the study is carried out adequately described? There was no information about the setting, but procedures and policies were all adequately described. This information may help the reader to understand the context of the study and to compare with their own settings.</p> <p>Who was selected? From what populations were they selected? What was the precise method of selection and allocation? Was there a sample size calculation? There was no information on either the target population or a sample size calculation. However, the data showed that a total of 173 children were screened using the Early Screening Inventory—Revised (ESIR) at both the start of the project and six months later. <b>The children's ages at the start of the project ranged from 40 months to 58 months; 88 of the children were</b> boys, age range 39 to 58 months, and 85 were girls, age range 37 to 58 months. None of the children in the project was on an SEN register at the time of the project.</p> <p>Was ethical approval obtained? Are there any other ethical implications? There was no information on ethical approval or any other ethical implications.</p>
5. Results	<p>Data analysis (for IH) Was there a separate section in the paper that explained the planned analyses prior to the presentation of the results? There was a separate section in the paper about which statistical methods were used simply (percentage) and how they were applied to the data. Most of this information can be gathered from the overall ESI-R screening decisions (OK, Re-screen, Refer), in which results for boys, girls and all children at pre- and post-intervention are presented. There is a summary of movement between screening categories from pre- to post-intervention and the percentage correct scores for each of the three sections, Visual-motor adaptive (VM), Language and cognition (LC) and Gross motor skills (GMS).</p> <p>Which statistical methods were relied on? Generally, the percentage correct data were analysed using multivariate analysis of variance (MANOVA) to explore changes in percentage correct scores between pre- and post-intervention and any differences relating to gender. The multivariate comparison revealed a highly significant effect of Time, with scores increasing from pre- to post-intervention (<b>Wilks's lambda</b> = 0.748, <math>F(3, 340) = 38.230</math>, <math>p &lt; 0.001</math>, partial <math>\eta^2 = 0.252</math>), but no significant differences in the patterns of scores for boys and girls. Significant differences between the mean scores for pre- and post-intervention were found for each of the three subsections: section 1 (VM) (<math>F(1, 171) = 106.670</math>, <math>p &lt; 0.001</math>, partial <math>\eta^2 = 0.124</math>), Section 2 (LC) (<math>F(1, 171) = 316.645</math>, <math>p &lt; 0.001</math>, partial <math>\eta^2 = 0.248</math>), and Section 3 (GMS) (<math>F(1, 171) = 22.991</math>, <math>p &lt; 0.001</math>, partial <math>\eta^2 = 0.032</math>).</p> <p>Is it clear how the statistical tests were applied to the data and groups?</p>

	<p>The table presentation clearly identifies the variables, groups, statistical tests performed and the resulting test results (here, p-values). It is easy for the reader to follow.</p> <p>Are the results clearly presented? The results in the text and in one figure and three tables are clearly presented.</p> <p>Are the results for all the aims presented? All aims of this project were to run all processing and answer every object.</p> <p>Are the results fully presented? In addition to the results, the statistical significance of the group comparisons at each point in time were stated; however, the authors could have mentioned a noticeable decreasing trend in the Refer category, movement between categories and the effectiveness of time with scores increasing from pre- to post- intervention. Moreover, there was a brief summary of questionnaire feedback, for example a positive response to the training with all staff who had participated feeling very confident about using the ESI-R afterwards.</p>
6. Discussion and interpretation of results (including limitations)	<p>Is it a balanced discussion? Has all possible explanations for the results given? Overall, it is a well-balanced discussion. The authors described and compared previous studies in order to interpret the results.</p> <p>Are the results discussed in the context of previous studies? The results are discussed in the context of the previous studies, <b>for example</b> 'the presence of particularly low scores in the area of language is consistent with previous research linking poor language processing skills and socio-economic status (e.g. Raz &amp; Bryant, 1990; Bowey, 1995)'.</p> <p>Are the results fully discussed? The results were fully discussed.</p> <p>Are the limitations of the study discussed? There was no topic on limitations. However, some information was discussed about limitations of the design and procedure. A period of six months was allowed for intervention work to take place, within the limits of the academic year, which would also allow sufficient time for initial screening and re-screening. Following six months of staff implementing tailored working, all the children were reassessed using the ESIR. Ideally, the researchers would have assessed the children again in the following September when they had moved into Year 1 to see if there was any change or wash-out of effects. However, this was not practically possible for a variety of reasons (for instance, they were not able to access information about where the Sure Start children went to school and the four nursery-linked schools felt unable to find the time for the screening process</p>

	given the demands of the National Curriculum). This is an issue that could usefully be addressed in future research. There was a surprising lack of communication of the results of screening with parents, although this may have reflected the fact that this was essentially a pilot project at the time.
7. Conclusions / recommendations	<p>There was no topic on conclusions. However, the authors discussed some aspects normally included in discussion topics.</p> <p>Are the conclusions justified? The conclusion was not justified.</p> <p>Are there recommendations for policy, practice or further research? Feedback from staff in this project suggested that they were aware of the need for early identification, but had previously <b>lacked the knowledge or the tools to do this. Early identification of a child's difficulties provides an opportunity to implement</b> appropriate intervention at a time when the child is likely to be most responsive. Thus, early systematic screening offers a potentially cost-effective way to begin to counter the underachievement associated with disadvantage by reducing the number of children needing to be referred to external specialists for help. This project reinforces the call by Mroz and Hall (2003) for the provision of more in-service training to support early-years practitioners in developing their skills in systematic screening — not just in the area of speech and language, but across a range of areas of development. All of the schools participating in this project are continuing to use the scheme.</p> <p>Are the results/conclusions helpful for my practice? The results and discussion were very helpful for my practice. It is clear that there were benefits achieved through the introduction of the scheme. Staff reported that systematic screening at the start of nursery highlighted problems that might have gone unnoticed, either completely or for some time. The screening helped to provide a clear overall picture of each <b>child's strengths and needs early on in their life at nursery and the findings helped staff to develop appropriate and focused</b> activities with which to develop areas of weakness. The records of their assessment and progress will provide valuable information to support the work of reception teachers and, if necessary, support a case for bringing in external specialist help. Additionally, feedback from staff in this project suggested that they were aware of the need for early identification, but <b>had previously lacked the knowledge or the tools to do this. Early identification of a child's difficulties provides an</b> opportunity to implement appropriate intervention at a time when the child is likely to be most responsive. Thus, early systematic screening offers a potentially cost-effective way to begin to counter the underachievement associated with disadvantage by reducing the number of children needing to be referred to external specialists for help.</p> <p>Are the results generalisable? The results are not generalisable to all children because there was no information about population and no sampling calculation. However, it is clear that the ages of children ranged from three to five.</p>

	<p>Funding Is there potential conflict of interest (if information on funding is provided)? This research was supported by funding from the Preston Education Action Zone and Sure Start, Grange Park, Blackpool.</p>
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### Conclusions

This study seemed to have served its purpose by providing more in-service training to support early-years practitioners in developing their skills in systematic screening—not just in the area of speech and language, but across a range of areas of development. All of the schools participating in this project are continuing to use the scheme. In some ways one could describe it as a pilot study (e.g. the sample was quite small) which raised a number of questions which could be more rigorously investigated by a large randomised controlled trial. Nonetheless the quality of this study itself is good enough for the findings to be taken seriously.

## Appendix 3.1: Comparison between One Thai and Three UK Curricula in General Information Topics

Topic	BTEC	CACHE		<b>Thai nursery workers' manual</b>
		Child Care and Education	Playwork	
Qualification	<ul style="list-style-type: none"> <li>•Edexcel Level 2 BTEC First Certificate</li> <li>•Edexcel Level 2 BTEC First Diploma</li> </ul>	<ul style="list-style-type: none"> <li>•CACHE Level 2 Award</li> <li>•CACHE Level 2 Certificate</li> <li>•CACHE Level 2 Diploma</li> </ul>	<ul style="list-style-type: none"> <li>•CACHE Level 2 Award</li> <li>•CACHE Level 2 Certificate</li> <li>•CACHE Level 2 Diploma</li> </ul>	Thai nursery workers receive a certificate to show they have attended six-day training. This is basic training, although some may have already attended other courses.
Guided Learning Hours (GLH)	<p>First Certificate consists of 3 core units; 180 GLH to complete</p> <p>First Diploma consists of 5 core units plus one specialist; 360 GLH to complete</p>	<p>Award – achieve Units 1 and 2; 120 GLH to complete</p> <p>Certificate – achieve Units 1–5; 300 GLH to complete</p> <p>Diploma – achieve Units 1–6 plus one optional unit chosen by their Centre from Unit 7–11; 480 GLH to complete</p>	<p>Award – achieve Units 1 and 2; 30 GLH and 20 hours of workplace observation and reflection (practical placement) to complete this qualification. CACHE recommends a further 40 hours of personal study. Further detail on practical placement will be found below in the playwork practice section</p> <p>Certificate – achieve Units 1 – 4; 80 GLH and 55 hours of workplace observation and reflection (practical placement) to complete this qualification. CACHE recommends a further 50 hours of personal study</p> <p>Diploma – achieve Units 1 – 6; 130 GLH and a total of 80 hours of workplace observation and reflection (practical placement) to complete all three qualifications</p>	<p>This certificate shows that nursery workers have attended this course. Currently, the Department of Local Administration encourages every Thai nursery worker to attend it</p>

Topic	BTEC	CACHE		<b>Thai nursery workers' manual</b>
		Child Care and Education	Playwork	
Core content	<ul style="list-style-type: none"> <li>Providing opportunities for learners to gain a nationally-recognised vocational qualification relevant to the <b>Children's Care, Learning and Development (CCLD)</b> sector</li> <li>Providing potential progression to higher-level vocational qualifications such as the Edexcel Level 3 BTEC Nationals in Early Years/<b>Children's Care, Learning and Development</b></li> <li>Providing opportunities for learners to develop a range of skills and techniques, personal qualities and attributes essential for successful performance in working life</li> </ul>	<p>Working in a supervised capacity, with children and their families, in a variety of settings and environments within the sector of <b>Children's Services</b></p>	<p>Supporting all children and young people in the creation of a space in which they can play. These qualifications offer the knowledge and understanding that underpins effective playwork practice and will prepare the playworker to work in a supervised capacity, with children and young people, in a variety of play settings and other environments where children play</p>	<p>Developing the knowledge of basic care and of the skills that develop in early childhood. The Thai workshop for nursery workers in childcare centres aims to improve basic knowledge of early childhood care and provide effective skills for enhancing child development.</p>
Entry requirement	<ul style="list-style-type: none"> <li><b>The Edexcel Level 2</b> BTEC First Certificate in <b>Children's Care, Learning and Development</b> is available to learners aged 14 and over</li> <li><b>The Edexcel Level 2</b> BTEC First Diploma in</li> </ul>	<p>There are no formal entry requirements for this qualification; however, the centre may set their own criteria. Candidates must be at least 14 years old in order to register for the Award and Certificate and at least 16</p>	<p>Candidates must:</p> <ul style="list-style-type: none"> <li><b>be at least 16 years old when starting the course of study</b></li> <li><b>be employed or working as a volunteer</b> within an appropriate setting with children and young people aged 4-16 years old and either:</li> </ul>	<p>There are no formal entry requirements for this qualification but Thai nursery workers must work in childcare centres managed by the Provincial Administrative Organisation (PAOs),</p>

Topic	BTEC	CACHE		<b>Thai nursery workers' manual</b>
		Child Care and Education	Playwork	
	<b>Children's Care, Learning and Development</b> is available to learners aged 16 and over	years old in order to register for the Diploma	<ul style="list-style-type: none"> <li>•have an adequate level of general education to cope with the demands of the qualification</li> <li>or</li> <li>•have considerable experience in playwork or related experience and the ability to show evidence of academic work of an appropriate level</li> </ul>	Municipalities or Tambon (Sub-District) Administrative Organisation (TAOs or SAOs) to qualify
Fee	No information	CACHE charges a registration fee for all candidates, which will be dealt with by the <b>nursery workers' centres</b>	CACHE charges a registration fee for all candidates, which will be dealt with by the <b>nursery workers' centres</b>	No information but in practice charges a registration fee for all candidates, which nursery workers can claim from their Local Administration Organisation office
Assessment	Assessed on three core units that provide a combined total of 180 guided learning hours (GLH) for the Edexcel Level 2 BTEC First Certificate, and five core units plus one specialist unit making a combined total of 360 GLH for the Edexcel Level 2 BTEC First Diploma	Assessed on each of the two units for the Award, each of the five units for the Certificate and all six units plus one optional unit chosen by their Centre from unit 7-11 for the Diploma	<p>Assessed on each of the two units for the Award, each of the four units for the Certificate and all six units for the Diploma</p> <p>Overall grade for the qualification</p> <p>Each unit is marked against CACHE assignment criteria and marks are allocated.</p> <p>These marks translate into a grade category. When the nursery workers have successfully completed all assignments, a Pass, Merit or Distinction grade is awarded for the overall qualification</p> <p>Progression from this qualification</p> <p>This qualification allows progression to higher level professional training, including other CACHE qualifications</p>	No information

## Appendix 3.2: Comparison Unit Titles between One Thai and Three UK Curricula

Unit No.	Unit Title							
	United Kingdom				Thailand			
	BTEC Edexcel Level 2 BTEC First Diploma in <b>Children's Care, Learning and Development</b> 2007	G L H	CACHE Level 2 Award/Certificate/Diploma in Child Care and Education 2009/10	G L H	CACHE Level 2 Award/Certificate/Diploma in Playwork 2009/10	G L H	Workshop for nursery workers in childcare centre organised by the Department of Local Administration (DLA)	Hours
1	<b>Understanding Children's Development</b>		60	An introduction to working with children	30	<b>Children's play and playwork</b>		3
2	Keeping Children Safe		60	The developing child	90	Planning and supporting play		2
3	Communication with Children and Adults		60	Safe, healthy and nurturing environments for children	60	Playwork provision that supports children and <b>young people's play and development</b>		4
4	Preparing and Maintaining Environments for Child Care		60	Children and play	60	Legal responsibilities for playworkers		3
5	Professional Development, Roles and Responsibilities in Child Care		60	Communication and professional skills within childcare and education	60	Playwork and the wider network		5
6	<b>Supporting Children's Play and Learning</b>		60	The childcare practitioner in the workplace	120	Reflective playwork practice		3
7	The Development and Care of Babies and Children Under Three Years		60	Working with children from birth to age five years	60			5
8	Providing Support for		60	Play activity for	60	<b>Children's nutrition</b>		3

Unit No. 5	Unit Title							
	United Kingdom				Thailand			
	G	L	H	G	L	H	Hours	
BTEC Edexcel Level 2 BTEC First Diploma in <b>Children's</b> Care, Learning and Development 2007	CACHE Level 2 Award/Certificate/Diploma in Child Care and Education 2009/10			CACHE Level 2 Award/Certificate/Diploma in Playwork 2009/10				
Children with Disabilities or Special Educational Needs				children from birth to age 16 years				
9				Supporting children with additional needs	60		Promoting virtue and morality in children	2
10				Introduction to <b>children's learning</b>	60		Children with common diseases, basic first aid and safety healthcare for children	3
11				Supporting children and families	60		The importance of music, rhyme and circle activity for children	4
Sum	8 units	480	11 units	720	6 units	130	11 units	37

NB: Highlighted areas pertain to play-related curricula content

Appendix 3.3: The Keyword Count for '**the Play Environment**' in the Curriculum

BTEC	Frequency	CACHE Level 2 in Child Care and Education	Frequency	CACHE Level 2 in Playwork	Frequency	<b>Thai nursery workers' manual</b>	Frequency
Environment	30	Play	28	Play	58	Environment	12
Role play/the role of play	29	The stages of types of play	16	A play setting	36	Play	9
All aspects of children's play/aspects of play	20	Safe, healthy and nurturing environments	13	Planning and supporting play	21	Providing an environment	5
Imaginative and creative play	15	A play activity	12	Play spaces/a play space	20	Safe, healthy and nurturing environments	4
Play	13	The main theories of play	4	Children's play	18	A stimulating environment	4
<b>Children's play</b>	13	The importance of play	3	Play environment	17	Social environment	2
A safe and secure environment for children	12	Environment	2	Play and development/the play and development of children	14	Physical environment	2
Play activities/five different play activities	10	A practical environment/practical work environments	2	A range of play types/types of play	10	External environment	1
Play opportunities	9	Development through play	1	Play needs	9		
Physical play	8	An adventure play area	1	Play opportunities	8		
Encouragement and supervision of children's play	8	Risk and challenge in play	1	The main stages of play cycle	8		
The benefits of physical play	7	The range of training environments	1	Rights to play	7		
The different types of play	7	A variety of settings and environments	1	Self-directed play	7		
Materials for play/the play materials/resources for play	7	The training environment	1	A play provision	5		
Integrate play	6	Immediate and wider environment	1	Environment	3		

BTEC	Frequency	CACHE Level 2 in Child Care and Education	Frequency	CACHE Level 2 in Playwork	Frequency	Thai nursery workers' manual	Frequency
Preparing and maintaining the physical and play environments	6	A working environment	1	A play session	3		
A stimulating environment	6			Risky play	2		
The role of the environment and care routines	5			A playscheme	2		
The potential role of physical play	4			Children's <b>freely</b> -chosen play	2		
<b>Supporting children's play and learning</b>	3			Choice of play	2		
Choice of play activities	3			Play requests	2		
<b>Children's environments</b>	3			Theories of play	2		
Preparing and maintaining environments	3			The importance of play	2		
Importance of providing physical play	2			A variety of play settings	1		
How children play	2			The health and safety requirements of the play setting	1		
Support and encouraging children's play	2			Ethos of play provision	1		
Variety for play	2			The content of play	1		
Exploratory play	2			A resource for play	1		
Supporting and encouraging play/encouragement and stimulation of play	2			Play behaviours	1		
Support physical play	2			Play cues	1		
The right to play	2			Supporting choice for play	1		
The supervision of children's	2			Types of play environment	1		

BTEC	Frequency	CACHE Level 2 in Child Care and Education	Frequency	CACHE Level 2 in Playwork	Frequency	<b>Thai nursery workers' manual</b>	Frequency
play							
Barriers in the environment	2			A practical environment	1		
The use of clear speech and plain language/ adaptation of the environment	2						
Play environments	2						
The need for regular environment changes	2						
An interesting and exciting environment	2						
The accessibility and inclusiveness of the environment	2						
Providing an environment	1						
Environmental regulations	1						
The supervision of children's physical play	1						
Imaginative and creative play	1						
The development of play	1						
The role of self-directed play	1						
The appropriateness of the environment	1						
The important elements of maintaining an environment	1						
Nature of environment	1						

## Appendix 3.4: Implications for the MMTP Content Covering Three Components in the Play Environment

Topics	Content analysis finding	Implications for the MMTP content covering three components in the play environment
The aim of the training	<p>This unit aims to enable nursery workers:</p> <p>Support</p> <ol style="list-style-type: none"> <li>1. To gain knowledge, understanding and skills to enable them to support all <b>aspects of children's play and learning</b>.</li> <li>2. To gain understanding about the different types of play and about the role of the adult in play activities.</li> <li>3. To learn how to provide for <b>children's imaginative and creative play</b> through the provision of resources, encouragement of children and appropriate intervention.</li> <li>4. To learn how to support physical play, to understand its benefits for children and how to encourage and supervise this type of play.</li> <li>5. To gain understanding of how to encourage children to explore and investigate through their play, the resources required and the nature of adult encouragement.</li> </ol> <p>1. To introduce nursery workers to the key issues to consider when planning for and supporting children and young people at play. It will also cover how to reflect on and improve nursery <b>worker's practice</b></p> <p>1. To enable nursery workers to understand how the development of children affects their play and how it can be supported through play. It will cover the organisational frameworks that support children's rights to play, how to support children's development through play and how nursery workers can work to support play.</p>	<p>This training aims to gain knowledge, understanding and how to support and encourage children to enable nursery workers know the role of the adult in how to provide play activities for children (how to reflect on and improve nursery <b>worker's practice</b>) :</p> <ol style="list-style-type: none"> <li>1. To promote and support all <b>aspects of children's play and learning</b> and also to introduce <ul style="list-style-type: none"> <li>-the value of play as a vehicle for learning for children of different ages, stages and abilities.</li> <li>-how to encourage and supervise the different types of play.</li> </ul> </li> <li>2. To provide appropriate play and learning experiences for children and promote their holistic development. <ul style="list-style-type: none"> <li>-how to encourage children to explore and investigate through their play, the resources required and the nature of adult encouragement and the integration of play, and the stimulation of children.</li> <li>- To learn how to provide and <b>support for children's</b> imaginative, creative, physical, emotion, social, autonomy and language play through the provision of resources,</li> </ul> </li> </ol>

Topics	Content analysis finding	Implications for the MMTP content covering three components in the play environment
	<p>Environment</p> <p>1. To introduces learners to the importance of providing a warm, safe, secure and encouraging environment.</p> <p>1. To learn about the preparation and maintenance of a safe environment and how to safeguard children and adults through working practices. Considering the role in managing conflict when working with children.</p> <p>Play</p> <p>1. The stages and types of play and how you can provide appropriate activities to support development through play.</p> <p>2. Think about how to provide children with challenge and risk in a safe environment and the role of the adult in encouraging exploration and investigation.</p>	<p>encouragement of children and appropriate intervention.</p> <p>3. To prepare and maintain of a safe, warm, secure and encouraging environment for <b>child care that builds children's</b> confidence and resilience, through acknowledging achievement, ensuring consistency and helping children to socialise and to cope with change considering the role in managing conflict when working with children and integrate play.</p>
	<p>1. Understanding how to provide play activities for children.</p> <p>2. Understanding about the main stages of play and the diverse play needs of individuals.</p> <p>3. Learn how to support play opportunities and the key issues for you to consider as an adult.</p> <p>1. To support nursery workers to develop an understanding of working with children in a play setting. It will cover some theories of play and the importance of relationships with children.</p>	

Topics	Content analysis finding	Implications for the MMTP content covering three components in the play environment
Learning outcomes of the training	<p>Nursery workers will understand:</p> <p>Support</p> <p>1 how to prepare and maintain the physical and play environment</p> <p>2 how to prepare and maintain a stimulating environment</p> <p>3 how to maintain an environment that builds children's <b>confidence and resilience</b></p> <p>4 how to support routines for children and integrate play.</p> <p>1. Understand some theories of play</p> <p>2. Understand the importance of relationships with children.</p> <p>1. Understand how to plan for and support play.</p> <p>2. Understand how to reflect on and improve on <b>nursery worker's</b> practice.</p> <p>1.Understanding organisation frameworks of the play provision that <b>supports children's rights to play</b></p> <p>2. Understand how to support <b>children's development through play</b></p> <p>3. Understand how nursery workers can work to support play.</p> <p>Environment</p> <p>1 Understand the major theories of how children develop and learn</p> <p>2 Understand the role of play in the development of children</p> <p>3 Understand the role of the adult in all aspects of the provision and implementation of play and learning activities for children</p> <p>4 Know how to identify and promote learning opportunities for children aged from 0 to 8 years of age</p> <p>5 Be able to plan, implement and evaluate learning activities for children aged from 0 to 8 years of age</p> <p>6 Be able to provide play situations for children.</p> <p>1 Understand how to support <b>children's play</b></p> <p>2 Understand how to help to provide <b>opportunities for children's imaginative and creative play</b></p>	<p>Nursery workers will understand:</p> <p>1. how to prepare and maintain the physical and play environment, a stimulating environment that builds <b>children's confidence and resilience</b> by supporting routines for children and integrate play.</p> <p>2 the role of play in the development of children and the role of the adult in all aspects of the provision and implementation of play and learning activities for children</p> <p>3 the role of the adult in all aspects of the provision and implementation of play, learning activities and promote learning opportunities for <b>children's imaginative, creative and physical play</b></p> <p>4 providing and supporting play situations for children.</p> <p>5 how to encourage children to explore and investigate.</p> <p>6 how to prepare and maintain a safe environment and implement working practices that safeguard children and the adults who work with them.</p> <p>7. Understand the role of the practitioner in working with children to manage conflict.</p>

Topics	Content analysis finding	Implications for the MMTP content covering three components in the play environment
	<p>3 Understand how to help to support physical play</p> <p>4 Understand how to encourage children to explore and investigate.</p> <p>Play</p> <ol style="list-style-type: none"> <li>1. How to prepare and maintain a safe environment and follow relevant policies and procedures.</li> <li>2. How to implement working practices that safeguard children and the adults who work with them.</li> <li>3. The role of the practitioner in working with children to manage conflict.</li> </ol> <ol style="list-style-type: none"> <li>1. The importance of play and activities and how these link to development</li> <li>2. The stages of play</li> <li>3. The types of play and appropriate activities for learning and how to provide them.</li> </ol> <ol style="list-style-type: none"> <li>1. How to meet the diverse play needs of children.</li> <li>2. How to support a range of play opportunities for children.</li> <li>3. The role of the adult in providing play activity for children.</li> </ol>	

## Appendix 3.5: Implications of the Content for the MMTP

Content Analysis Finding	Implications for the MMTP	
Unit content	Content for training	
Play and child development	The play environment	
<p><b>1. Understand how to support children's play</b>  Understand play: different types of play, eg physical, manipulative, imaginative; exploratory, creative; the right to play, eg United Nations Convention on the Rights of the Child; importance of role of play in <b>children's development and learning, eg</b> development of communication skills, social and emotional development, problem solving, understanding mathematical concepts; development of play as children grow older.  Resources: provision of materials and equipment for the different types of play, eg natural materials such as sand, water and wood, constructional apparatus.  Encouragement: encourage children to explore and choose play opportunities for themselves, to adapt ideas and resources according to their needs.  <b>Supervision: supervise children's play, being</b> available but not intrusive; offer new ideas and resources or alternatives to enable accessibility for the encouragement and stimulation of play; set ground rules for play; ensure that all play is suitable for the <b>children's age, needs and abilities.</b>  Involvement: take part in play with children if this is what they want; allow children to develop their own play ideas without over or</p>	<p>1. Know how to prepare and maintain the physical and play environment  Health and safety: follow risk assessments and health and safety procedures, regulations that apply to the environment, policies and procedures of the setting before and during <b>the children's presence; check appropriate</b> heating and ventilation.  Use of space: effective use of space to provide activities and play environments for children both indoors and outdoors; set out furniture, equipment and resources safety; ensure entrances, exits and fire exist are not obstructed; monitor the use of space before, <b>during and after a day's session.</b>  <b>Meeting children's needs: ensure</b> appropriateness of the environment, including play materials and equipment to the ages, developmental stages and may special or additional needs of the children; ensure that the environment is accessible and inclusive for all children, taking into account different genders, cultures and ethnicity, needs and abilities  Age ranges: 3-5 years  2. Understand how to prepare and maintain a stimulating environment  Displays: use of visual and tactile displays to provide a positive learning experience for</p>	<p>1. The professional role of Thai nursery workers in play.  1.1 Professional standards  -Caring  -Reliable and punctual  -Fair and consistent  -Respectful and thoughtful  -Patient  -Hardworking  1.2 Communication skills  -Listening  -Body language</p> <p>2. The importance of play and the play environment  -The importance of play as part of learning and development  -The relationship between play and learning.  -The types of play.  -The stages of play.</p> <p>3. Promoting child development through play activities  <b>• how to provide a positive and flexible</b> learning environment that meets the needs of children</p>

Content Analysis Finding	Implications for the MMTP
Unit content	Content for training
<p>under protection; ensure there is enough time and adequate resources to enable children to develop and deepen play according to their interests.</p> <p>Curriculum: the relation of different aspects of play to relevant curriculum frameworks, eg one to one correspondence in role play.</p> <p>Age ranges: 0-3 years, 3-7 years, 7-12 years and 12-16 years.</p> <p>2. Understand how to help to provide <b>opportunities for children's imaginative and creative play</b></p> <p>Resources: provision and selection of a range of materials, equipment and props to support imaginative and creative play, eg home corner equipment and materials, dressing up clothes, musical instruments, paint, glue, paste.</p> <p><b>Intervention: enable children's imaginative play to flow freely, following the children's interests and the settings requirements without adult intervention unless requested by the children or when additional ideas or resources are needed.</b></p> <p>Encouragement: avoidance of stereotyping in imaginative play according to the requirements of the setting; exploration of the feelings and roles of others through imaginative play; participation in mark-making, painting, drawing, modelling and printing.</p> <p>3. Understand how to help to support</p>	<p>children and to promote positive images of people in accordance with the values and principles of the early years sectors; involvement of children in preparing and maintaining displays; <b>help display children's work in ways that encourage them and promote self-esteem.</b></p> <p>Use of senses: use of different colours, music and sounds, scents and aromas to provide an interesting and exciting environment</p> <p>Nature of environment: regular environment <b>changes to stimulate children's interests;</b> sufficient flexibility, variety and choice of <b>resources for play according to children's ages, need and abilities;</b> encouraging <b>children's active involvement in decisions</b> about their environment and finding out what they want in their play environment.</p> <p>Nature of environment: regular environmental <b>changes to stimulate children's interests;</b> sufficient flexibility, variety and choice of <b>resources for play according to children's ages, need and abilities;</b> encouraging <b>children's active involvement in decisions</b> about their environment and finding out what they want in their play environments.</p> <p>3. Understand how to maintain an <b>environment that builds children's confidence and resilience</b></p> <p>Achievements: praise and acknowledgement <b>of all children's achievements;</b> <b>help children</b></p> <ul style="list-style-type: none"> <li>● <b>how to use children's play to achieve</b> learning and development outcomes/goals whilst ensuring children have choice and flexibility.</li> </ul> <p>Child development</p> <ul style="list-style-type: none"> <li>- how to support children's language and communication development</li> <li>- how to support the sensory and intellectual development children covering appropriate environments, activities and experiences</li> <li>- how to provide activities and equipment to promote the physical development of children</li> <li>- how to support the social and emotional development of children</li> <li>- how to help children become familiar with and confident in the setting, activities, environments and routines that support positive identity and self-esteem (Autonomy)</li> </ul> <ul style="list-style-type: none"> <li>● <b>how to prepare young children for moving on to new settings and for other transitions.</b></li> </ul>

Content Analysis Finding	Implications for the MMTP
Unit content	Content for training
<p>physical play</p> <p>Benefits of physical play: all round benefits including emotional and social.</p> <p>Encouragement: encourage all children who can and wish to take part in physical play; include those who experience difficulties in movement; taking part in physical play using their whole bodies; taking turns and considering others; development of fine motor skills by proving appropriate materials and activities, eg threading, small construction.</p> <p>Supervision: supervise physical play without under or over protection; ensure effective use <b>of space; suitability for children's age, needs and abilities.</b></p> <p>4. Understand how to encourage children to explore and investigate</p> <p>Resources: find out about community resources to encourage children to explore and investigate; investigate and explore indoor and outdoor resources including Information communication technology.</p> <p>Encouragement: engage children's <b>curiosity</b> by providing interesting and stimulating activities and experiences; show own interest in exploring and investigating; providing opportunities for exploration and different experiences for older children; taking risk; the under and over-protection of children.</p> <p>5. Understand the role of observation of <b>children's development in the workplace</b></p>	<p>to recognise their own achievements; help children to make progress and achieve appropriate to their age, needs and abilities; encourage children to participate in activities; be aware of the relationship between self-esteem, confidence and resilience.</p> <p>Change and consistency: explain foreseeable changes in the environment clearly and honestly; provide reassurance, explanations and comfort for any changes in the environment; the effects of security and <b>reassurance on children's confidence</b>, recognising insecurity and anxiety; role of <b>ability to predict upon children's sense of security and confidence.</b></p> <p>Socialising: provide an environment that encourages children to socialise with each other and with adults; informal games and play opportunities to stimulate and encourage children.</p> <p>Backgrounds: help children to be positive about their own cultural backgrounds.</p> <p>4. Know how to support routines for children and integrate play</p> <p>Provision of food and drinks: understand the basic nutritional needs of children, drinking water, different food groups, nutritional requirements; effects of poor diet; cultural variations; different food types of food allergies; importance of following the procedures of the setting to protect children;</p>

Content Analysis Finding	Implications for the MMTP
Unit content	Content for training
<p>through play</p> <p>Purpose of careful observation: knowledge of and needs of child; in the event of concerns for the child.</p> <p>Methods of recording observations: difference between formal and informal observation; time and event samples; recording, eg running records, checklists.</p> <p>Objectivity: not jump to premature conclusions, eg ignorance, prejudice, checking views with others.</p> <p>Reporting: referring findings and concerns appropriately, eg according to the needs of the setting.</p> <p>Confidentiality: importance of confidentiality; data protection; procedures for sharing information; ethical considerations.</p> <p><b>6. Know how to observe children's development through play</b></p> <p><b>Observation and noting children's physical development:</b> eg how children move about, coordinate their movements, use space and large equipment, manipulate and use small equipment.</p> <p><b>Observing and noting children's social and emotional development:</b> eg how children behave in everyday situations, how they express feelings and emotions, how they relate to each other and to adults, how confident children are and how they feel about themselves (self-concept).</p> <p><b>Observation children's communication and</b></p>	<p><b>importance of supporting children's food preferences, basic information about safe food handing.</b></p> <p><b>Consistency:</b> importance of consistency in <b>children's development; help implement</b> consistent routines for children.</p> <p><b>Balance:</b> importance of providing physical play; helping children who have limited physical play opportunities; importance of providing quiet times or rest periods; support and encourage children to play.</p> <p><b>Children's personal care:</b> supporting children in the use of toilet; hand-washing; care of skin and hair; use opportunities to play; use of toiletries; sun safety; development and care of teeth.</p>

Content Analysis Finding	Implications for the MMTP
Unit content	Content for training
intellectual development: eg how children play, use imagination, take on the roles of others, concentrate on activities, memories things, solve problems, pay attention to what is around them, use their senses to gain new information.	

## Appendix 3.6: The Multimedia Teaching Package Training Session Plan

### Promoting child development: The importance of the play environment

#### Location

The Meeting room at Boromarajonani College of Nursing  
Lampang, Lampang province, Thailand

#### Timings

One-day training (07.30 – 16.50)  
*Please register from 07.30 for 08.00 start*

#### Course Leader

Mrs Sompratthana Sudjainark  
MPhil/PhD student  
University of Southampton, United Kingdom

Mrs Sompratthana Sudjainark is a student from the University of Southampton, United Kingdom. She is conducting this study as part of her MPhil/PhD study, under the supervision of Professor Edward Alan Glasper and Dr Peter Nicholls from the Faculty of Health Sciences.

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## Course Description

This one-day nursery workers' training course will allow trainees to explore the importance of the play environment by using a multimedia teaching package to help them develop their knowledge and attitudes. These variables are important for bringing about effectiveness and efficiency in the work of nursery workers in childcare centres, as well as positively impacting on child development. Additionally, this training will use different workshops in order to give nursery workers ideas and practical experience for maintaining a balance between theoretical ideals and practical realities. This training will examine teaching and learning processes in the context of children's play. It will energise critical, reflective thinking in nursery workers concerned with the quality of children's learning and development.

## Course Aims

1. To learn the importance of the play environment in early childhood development.
2. To have a positive attitudes towards the play environment.
3. To understand and apply the main stages, types of play and the diverse play needs of individuals in terms of growth and different aspects of development - Social, Physical, Emotional, Creative, Intellectual, Autonomous and Language (SPECIAL).
4. To learn about adult roles and how to apply SPECIAL using seven different workshops that will give childcare workers new ideas and practical experience to use in their work.
5. To enable childcare workers to provide appropriate activities for supporting development through play by using a range of materials and understanding the nature of adult encouragement.

## Course timetable (Trainees)

Time	Duration (Minutes)	Session
7.30-8.00	30	1. Registration <i>Refreshments</i>
8.00-8.10	10	2. Welcome and Introduction
8.10-8.55	45	3. Pre-test
8.55-9.10	15	4. Icebreaking activity
9.10-9.40	30	5. The importance of the play environment
9.40-9.55	15	<i>Refreshment Break</i>
9.55-10.40	45	6. Explain SPECIAL developments and adult roles
10.40-11.45	65	7. Workshop 1: Using role play in small worlds construction and home corners 8. Workshop 2: Book corners 9. Workshop 3: Outdoor play and music
11.45-12.15	30	10. Show and tell
12.15-13.15	60	<i>Lunch</i>
13.15-14.20	65	11. Workshop 4: Play dough 12. Workshop 5: Painting, drawing, gluing and collage 13. Workshop 6: Play with natural materials: water, wood, clay, sand and alternatives
14.20-14.50	30	14. Show and tell
14.50-15.05	15	<i>Refreshment Break</i>
15.05-15.20	15	15. Energising activity
15.20-15.50	30	16. Workshop 7: A story bag
15.50-16.05	15	17. Summary and evaluation
16.05-16.50	45	18. Post-test

## Session 1

### Registration

**Trainees' names and telephone numbers will be taken and name tags given. They will be given the training bag and shown the training facility. Refreshments will be available.**

### Registration Document Day 1,2,3,4

No	Name	Childcare centre address	Telephone
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			

Session 2					
Title	Welcome and Introduction				
Trainees	15 childcare workers				
Duration	10 minutes				Course Aims
Lesson Aims	1. To introduce the trainer 2. To introduce the course aims				Not applicable
Materials	PowerPoint				
LEARNING OUTCOME		ACTIVITY	PROCEDURE	GROUPING	MATERIALS
- To understand the course aims - To introduce the course activities		Presentation	1. Introduce trainer and assistants. 2. Discuss PowerPoint slides.	Open class	PowerPoint 10

Session 3					
Title		Instructions for Pre-test			
Trainees		15 childcare workers			
Duration		45 minutes			Course Aims
Lesson Aims		To test knowledge and attitudes towards play and development and the environment of care			Not applicable
Materials		Test			
LEARNING OUTCOME	ACTIVITY	PROCEDURE	GROUPING	MATERIALS	TIMING
	Move chairs	Ask the trainees to move their chairs as shown in the pre- and post-test room plan. Distribute questionnaires and read instructions on front page of test. Give the start and finish times (40 minutes): trainees should wait in their places until the finish time.	Individual	Test	5
	Test	Trainees complete questionnaires. Trainer moves around to check understanding of task and answer any questions. Collect questionnaires and add to teaching file.	Individual	Test	40

Session 4	Icebreaking Activity						
Title	Bingo						
Trainees	15 childcare workers						
Duration	15 minutes		Course Aims				
Lesson Aims	1. To bridge the gap between trainers and trainees and among trainees 2. To help trainees feel at home during the training course 3. To increase active involvement in the training sessions			Not applicable			
Materials	Bingo sheet and pen						
Procedure Assessments & Evaluation	Observe trainees' participation during group.						
LEARNING OUTCOME	ACTIVITY	PROCEDURE	GROUPING	MATERIALS	TIMING		
- Understand the task	Introduction	1. Distribute Bingo sheets to all the trainees. 2. Ask each trainee to go to another trainee to see if they <b>can both respond with a 'yes' to the item in the box on the sheet.</b> 3. If they have two of the same items, the other trainee must sign his/her name in the appropriate box. 4. If you cannot find a similar answer, find and ask another trainee. 5. Each trainee does the same with all the other group members. The trainee who gets signatures in all the boxes first has to announce the names of the people from whom he/she obtained signatures and will be declared the winner.	Pairs	Bingo sheet pen	3		
- To get to know each other	Bingo mingle	6. Trainees mingle and trainer observes to check understanding of task.	Pairs	Bingo sheet pen	12		

## Bingo Mingle

Meet and introduce yourself to other trainees. Ask each trainee a question using the boxes below. If **you can both respond with a 'yes' to the question, write the trainee's name in the box. If you cannot find a similar answer, find and ask another trainee.**

Have three children or more	Like romantic movies	Had hair cut within two weeks
Enjoy spicy food	Like rainy days	Enjoy travelling
Like dogs	Like bananas	Like novels
Believe in horoscopes	Like to sing	Like yellow rather than red

Session 5					
Title	The Importance of the Play Environment				
Trainees	15 childcare workers				
Duration	30 minutes				
Lesson Aims	To understand the importance of the play environment				
Materials	PowerPoint presentation Handout DVD				
Final Product					
Procedure Assessments & Evaluation	Observe trainees' participation during group discussions.				
LEARNING OUTCOME	ACTIVITY	PROCEDURE	GROUPING	MATERIALS	TIMING
	Introduction	1. Introduce the title of this session and describe the activities.			1
- Understand the importance of play environment	Presentation	2. Use PowerPoint slides to explain the importance of play environment.	Open class	PowerPoint	5
- Identify the importance of play environment	Watching DVD and answering the questions	3. Give handout with questions about the importance of play environment. 3. Watch DVD and answer the questions in part one of the handout. (DVD shows example of different play and environment of care. Explain about the importance of play environment.)	Open class and individually	Handout DVD	10
- Share ideas about the importance of play environment	Discussion	4. Discuss part two of the handout in small groups and share the answers.	Group of 3	Handout	7
- Develop ideas about the importance of play environment	Discussion	5. Discuss in open class.	Open class	Handout	7

Session 6					
Title	SPECIAL Developments and Adult Roles				
Trainees	15 childcare workers				
Duration	45 minutes				Course Aims
Lesson Aims	To understand SPECIAL developments and adult roles				2-4
Materials	PowerPoint presentation Handout DVD				
Final Product					
Procedure Assessments & Evaluation	Observe childcare workers' participation during group discussions.				
LEARNING OUTCOME	ACTIVITY	PROCEDURE	GROUPING	MATERIALS	TIMING
	Introduction	1. Introduce the title of this session and describe the activities			1
- Understand what SPECIAL developments and adult roles are	Presentation	2. Use PowerPoint slides to explain SPECIAL developments and adult roles	Open class	PowerPoint	10
- Identify SPECIAL developments and adult roles	Watching DVD and answering the questions	3. Give handout with questions about SPECIAL developments and adult roles. 3. Watch DVD and answer the questions on the handout (This is the same DVD as used in session 5. The examples of different play identified in session 5 also show SPECIAL developments and adult roles).	Open class and individually	Handout DVD	10
- Share ideas about SPECIAL developments and adult roles	Discussion	4. Discuss in small groups and share the answers.	Group of 3	Handout	10
Develop ideas about SPECIAL developments and adult roles	Discussion	5. Discuss in open class.	Open class	Handout	10

## Session 6 handout

Watch DVD and answer the following questions:

	Social development	Physical development	Emotional development	Creative development	Intellectual development	Autonomous development	Language development
What did the children learn from play?							
How can you encourage children while they play?							

Session 7-9					
Title		Workshops 1-3 and Instruction			
Trainees		15 childcare workers			
Duration		65 minutes			
Lesson Aims		To set up workshops 1-3			
Materials		Not applicable			
Final Product		Not applicable			
LEARNING OUTCOME	ACTIVITY	PROCEDURE	GROUPING	MATERIALS	TIMING
- Understand task	Instruction	<ol style="list-style-type: none"> <li>1. Randomly divide trainees into 3 groups (group of 5).</li> <li>2. Number the groups 1-3.</li> <li>3. Group A starts at workshop table 1, group B starts at workshop table 2 and group C starts at workshop table 3.</li> <li>4. Each workshop lasts 20 minutes.</li> <li>5. When the trainer blows the whistle, each group changes table (follow numerical order).</li> <li>6. At the end of this session, your group will show one final product from your last workshop.</li> <li>7. Give one SPECIAL handout to each group. The group completes the chart together. This will be photocopied at the end of the day so each member has a copy.</li> </ol>	Open class	SPECIAL handout	3
		<ol style="list-style-type: none"> <li>8. Trainees go to appropriate workshop table.</li> <li>9. Check the group sizes.</li> <li>10. Workshops begin.</li> </ol>	Group of 5	None	2

Session 7	Workshop 1				
Title	Using Role Play in Small Worlds Construction and Home Corners				
Trainees	5 childcare workers				
Duration	20 minutes				
Lesson Aims	1. To focus on the importance of dramatic play (role play) 2. To identify the benefits of offering dramatic play (role play) 3. To know how children learn and develop through playing with dramatic play (role play) 4. To allow childcare workers to reflect on share and develop their experience of using dramatic play (role play) 5. To give childcare workers new ideas and practical experience to use dramatic play (role play) in their work				
Materials	1. Table 2. Handout 3. Dressing up clothes 4. Small worlds, construction: home corners materials				
Final Product	Make up role play				
Procedure Assessments & Evaluation		Observe childcare workers' participation during group discussions			
LEARNING OUTCOME	ACTIVITY	PROCEDURE	GROUPING	MATERIALS	TIMING
	Introduction	Introduce the title of the workshop and describe the activities			1
- Identify the value of using provided materials in role play	Answering questions	1. Answer question 1 on workshop handout. 2. Check understanding of question 1 by giving examples (if necessary). 3. Discuss answers and observations.	Group of 5	Handout Pen Clothing	5
- Identify importance of play in home corner and with small worlds - Identify importance of play with construction equipment	Group discussion	4. Use question 2 on workshop handout to identify SPECIAL developments when using small worlds, construction and dramatic play. 5. Work in group and make notes on SPECIAL handout.	Group of 5	Handout Flip chart Pens	5
- Experience and share ways of creating a role play	Creating a role play	6. Dressing up and inventing a story. - Show dressing up clothes and materials - Explain task: group must create one 3-minute story. - Every group member must have a role, dress up and speak. NOTE: group B of the session will present role play to the other groups.	Group of 5	Dressing up clothes and small world constructions	9

Session 8	Workshop 2				
Title	Book Corners				
Trainees	5 childcare workers				
Duration	20 minutes				
Lesson Aims	1. To focus on the importance of book corners 2. To identify the benefits of offering book corners 3. To know how children learn and develop through playing with book corners 4. To allow childcare workers to reflect on share and develop their experience of using book corners 5. To give childcare workers new ideas and practical experience to use book corners				
Materials	1. Table 2. Handout 3. Books 4. Games 5. Puzzles 6. Props: puppets, blank paper, plastic bottles, dolls 7. Mark-making equipments				
Final Product	Narrating a story				
Procedure Assessments & Evaluation		Observe childcare workers' participation during group discussions			
LEARNING OUTCOME	ACTIVITY	PROCEDURE	GROUPING	MATERIALS	TIMING
	Introduction	Introduce the title of the workshop and describe the activities			1
- Identify what makes a good book corner	Answering questions	1. Answer question 1 to 2 on workshop handout. 2. Check understanding of question 1 to 2 by giving examples (if necessary). 3. Discuss answers and observations.	Group of 5	Handout Pen	5
- Identify the benefits of providing book corners	Group discussion	4. Use question on workshop handout to identify SPECIAL developments when using books, games and puzzles. 5. Work in group and make notes on SPECIAL handout.	Group of 5	Handout Flip chart Pens	5
- Develop storytelling techniques using books	Creating a story	6. Select a book and use props to narrate a 3-minute story. 7. Every group member must have a role. NOTE: group C of the session will narrate their story to the other groups.	Group of 5	Props	9

Session 9	Workshop 3				
Title	Outdoor Play and Music				
Trainees	5 childcare workers				
Duration	20 minutes				
Lesson Aims	1. To focus on the importance of outdoor play and music 2. To identify the benefits of offering outdoor play and music 3. To know how children learn and develop through playing with outdoor play and music 4. To allow childcare workers to reflect on, share and develop their experience of outdoor play and music 5. To give childcare workers new ideas and practical experience to use outdoor play and music in their work				
Materials	1. Table 2. Handout 3. Musical Instruments				
Final Product	Make up a story using a variety of sounds, and tell their story to the rest of the learner group				
Procedure Assessments & Evaluation		Observe childcare workers' participation during group discussions			
LEARNING OUTCOME	ACTIVITY	PROCEDURE	GROUPING	MATERIALS	TIMING
	Introduction	Introduce the title of the workshop and describe the activities			1
- Identify the importance of access to outside play space - List resources which have the potential to enhance outside play - Identify methods for introducing and providing play experiences with music	Answering questions	1. Answer question 1 and 2 on workshop handout. 2. Check understanding of question 1 and 2 by giving examples (if necessary). 3. Discuss answers and observations.	Group of 5	Handout Pen	5
- Identify the benefits of providing outdoor play and music	Group discussion	4. Use question 3 on workshop handout to identify SPECIAL developments when using outdoor play and music. 5. Work in group and make notes on SPECIAL handout.	Group of 5	Handout Flip chart Pens	5
- Develop storytelling techniques using a range of sounds as props	Creating a story	6. Use musical instruments to make up a 3-minute story using a variety of sounds. NOTE: group A of the session will present sound story to the other groups.	Group of 5	Musical instruments Handout Pen	9

Session 10							
Title		Show and Tell					
Trainees		15 childcare workers					
Duration		30 minutes		Course aims			
Lesson Aims		1. To present a final product from each workshop 2. To share learning experiences 3. To consolidate understanding and learning from the three workshops 4. To put SPECIAL development into practice		1-5			
Materials		From workshop tables 1-3					
Final Product		Present stories					
LEARNING OUTCOME	ACTIVITY	PROCEDURE	GROUPING	MATERIALS	TIMING		
	Finding seating	1. Group B and C assemble in the centre of the workshop area.	Group B and C		3		
- Present and share learning experiences and final product from workshop 3	Showing story	2. Group A states the title of their workshop and present their 3-minute sound story.	Group A	Table 3	3		
- Check SPECIAL developments in this activity	Discussion	3. Discuss the SPECIAL developments in this activity. Add notes to group SPECIAL handout if required.	Open class	Group SPECIAL handout	5		
- Present and share learning experiences and final product from workshop 1	Showing story	4. Group B states the title of their workshop and present their 3-minute role play.	Group B	Table 1	3		
- Check SPECIAL developments in this activity	Discussion	5. Discuss the SPECIAL developments in this activity. Add notes to group SPECIAL handout if required.	Open class	Group SPECIAL handout	5		
- Present and share learning experiences and final product from workshop 2	Showing story	6. Group C states the title of their workshop and present their 3-minute narrated story.	Group C	Table 2	3		
- Check SPECIAL developments in this activity	Discussion	7. Discuss the SPECIAL developments in this activity. Add notes to group SPECIAL handout if required.	Open class	Group SPECIAL handout	5		

Session 11-13					
Title		Workshops 4-6 and Instruction			
Trainees		15 childcare workers			
Duration		65 minutes			
Lesson Aims		To set up workshops 4-6			
Materials		Not applicable			
Final Product		Not applicable			
LEARNING OUTCOME	ACTIVITY	PROCEDURE	GROUPING	MATERIALS	TIMING
- Understand task	Instruction	<ol style="list-style-type: none"> <li>1. Keep members in the same 3 groups as session 7-9 (group of 5).</li> <li>2. Group A starts at workshop table 4, group B starts at workshop table 5 and group C starts at workshop table 6.</li> <li>3. Each workshop lasts 20 minutes.</li> <li>4. When the trainer blows the whistle, each group changes table (follow numerical order).</li> <li>5. Please wash your hands after each workshop using the water buckets at each table.</li> <li>6. At the end of this session, your group will show one final product from your last workshop.</li> <li>7. Use the old SPECIAL handout. The group completes the chart together. This will be photocopied at the end of the day so each member has a copy.</li> </ol>	Open class	SPECIAL handout	3
		<ol style="list-style-type: none"> <li>8. Trainees go to appropriate workshop table.</li> <li>9. Check the group sizes.</li> <li>10. Workshops begin.</li> </ol>	Group of 5	None	2

Session 11	Workshop 4				
Title	Play Dough				
Trainees	5 childcare workers				
Duration	20 minutes				
Lesson Aims	<ol style="list-style-type: none"> <li>1. To learn how to make alternative dough</li> <li>2. To experience making and playing with different types of dough</li> <li>3. To identify the benefits of offering dough</li> <li>4. To know how children learn and develop through playing with dough</li> <li>5. To focus on the importance of play dough</li> <li>6. To allow childcare workers to reflect on share and develop their experience of using play dough</li> <li>7. To give childcare workers new ideas and practical experience to use play dough in their work</li> </ol>				
Materials	<ol style="list-style-type: none"> <li>1. Table</li> <li>2. Handout</li> <li>3. Dough recipe and ingredient</li> </ol>				
Final Product	Present five different types of dough				
Procedure Assessments & Evaluation	Observe childcare workers' participation during group discussions				
LEARNING OUTCOME	ACTIVITY	PROCEDURE	GROUPING	MATERIALS	TIMING
	Introduction	Introduce the title of the workshop and describe the activities			1
- Experience making and playing with different types of dough	Making different dough	<ol style="list-style-type: none"> <li>1. Give handout of 5 dough recipes.</li> <li>2. Each group member makes one type of dough.</li> <li>3. Encourage members to help each other.</li> <li>4. <b>When finished, all members should feel each other's dough.</b></li> </ol>	Individual and group of 5	Dough recipe and ingredient	9
- Identify the benefit of offering dough	Group discussion	<ol style="list-style-type: none"> <li>5. Use question on workshop handout to identify SPECIAL developments when using play dough.</li> <li>6. Work in group and make notes on SPECIAL handout.</li> </ol>	Group of 5	Handout Flip chart Pens	5
- Create with play dough	Creating with play dough	<ol style="list-style-type: none"> <li>7. Use the 5 different types of dough to make anything they want.</li> </ol> <p>NOTE: Each member of group B of the session will present the type of play dough they made and what they created with it to the other groups.</p>	Group of 5	Dough	5

Session 12	Workshop 5				
Title	Painting, Gluing, Collage and Drawing				
Trainees	5 childcare workers				
Duration	20 minutes				Course Aims
Lesson Aims	1. To focus on the importance of play in painting, gluing, collage and drawing 2. To identify the benefits of offering painting, gluing, collage and drawing 3. To know how children learn and develop through painting, gluing, collage and drawing 4. To allow childcare workers to reflect on, share and develop their experience of using painting, gluing, collage and drawing 5. To give childcare workers new ideas and practical experience for using painting, gluing, collage and drawing in their work				1 2, 4 3 4 5
Materials	1. Table 2. Handout 3. Painting, Gluing, Collage and Drawing materials				
Final Product	Present a group collage				
Procedure Assessments & Evaluation	Observe childcare workers' participation during group discussions				
LEARNING OUTCOME	ACTIVITY	PROCEDURE	GROUPING	MATERIALS	TIMING
	Introduction	Introduce the title of the workshop and describe the activities			1
- Share and develop alternative materials	Answering questions	1. Answer question 1 on workshop handout. 2. Check understanding of question 1 by giving examples (if necessary). 3. Discuss answers and observations.	Individual and group of 5	Handout pen	5
- Identify the benefit of play with paint, glue etc.	Group discussion	4. Use question 2 on workshop handout to identify SPECIAL developments when using painting, gluing, collage and drawing. 5. Work in group and make notes on SPECIAL handout.	Individual and group of 5	Handout Flip chart Pens	5
- Experience play with paint, glue, collage etc.	Creating a collage	6. Make one collage per group. Each group member must contribute. NOTE: group C of the session will present their collage to the other groups. They must describe what they did and why they did it. Each member must speak.	Group of 5	Painting, gluing, collage and drawing	9

Session 13	Workshop 6					
Title	Play with natural materials: water, wood, clay, sand and alternatives					
Trainees	5 childcare workers					
Lesson Aims	1. To focus on the importance of play with natural materials: water, wood, clay, sand and alternatives 2. To identify the benefits of offering play with natural materials: water, wood, clay, sand and alternatives 3. <b>Understanding children's approach to new activities</b> 4. To know how children learn and develop through playing with natural materials: water, wood, clay, sand and alternatives 5. To allow childcare workers to reflect on, share and develop their experience of using play with natural materials: water, wood, clay, sand and alternatives 6. To give childcare workers new ideas and practical experience for using play with natural materials: water, wood, clay, sand and alternatives					
Materials	Table and Natural materials: water, wood, clay, sand and alternatives					
Final Product	Presenting a list of alternative natural materials					
Procedure Assessments & Evaluation	Observe childcare workers' participation during group discussions					
LEARNING OUTCOME	ACTIVITY	PROCEDURE	GROUPING	MATERIALS	TIMING	
	Introduction	Introduce the title of the workshop and describe the activities			1	
- Experience how it feels to be in a new, unknown situation - Experience play with natural materials	Testing 5 feeling boxes and answering questions	1. Show 5 feeling boxes. 2. Explain the task: answer question 1 on workshop handout. 3. Discuss answers to question 2 on workshop handout to <b>identify childcare workers' feelings</b> . 4. Discuss answers to question 3 on workshop handout to <b>identify children's feelings when they face new activities</b> .	Individual and group of 5	5 feeling boxes Handout pen	9	
- To identify the benefit of these play opportunities.	Group discussion	5. Use question 4 on workshop handout to identify SPECIAL developments when using natural materials: water, wood, clay, sand and alternatives. 6. Work in group and make notes on SPECIAL handout.	Individual and group of 5	Handout Flip chart Pens	5	
- Identify a range of play materials as an alternative to natural materials - List the natural materials children play with in the natural environment	Creating a collage	7. Answer question 5 on workshop handout to identify alternative natural materials. NOTE: group A of the session will present their natural materials and suggested activities to the other groups. They can use explanations and show examples. Each member of the group must contribute.	Group of 5	Handout Flip chart Pens	5	

Session 14					
Title	Show and Tell				
Trainees	15 childcare workers				
Duration	30 minutes				Course aims
Lesson Aims	1. To present a final product from each workshop 2. To share learning experiences 3. To consolidate understanding and learning from the three workshops 4. To put SPECIAL development into practice				1-5
Materials	From workshop tables 1-3				
Final Product	Present stories				
LEARNING OUTCOME	ACTIVITY	PROCEDURE	GROUPING	MATERIALS	TIMING
	Finding seating	1. Groups B and C assemble in the centre of the workshop area.	Groups B and C		3
- Present and share learning experiences and final product from workshop 6	Showing story	2. Group A gives a list of alternative natural materials.	Group A	Table 6	3
- Check SPECIAL developments in this activity	Discussion	3. Discuss the SPECIAL developments in this activity. Add notes to group SPECIAL handout if required.	Open class	Group SPECIAL handout	5
- Present and share learning experiences and final product from workshop 4	Showing story	4. Group B lists five different types of dough.	Group B	Table 4	3
- Check SPECIAL developments in this activity	Discussion	5. Discuss the SPECIAL developments in this activity. Add notes to group SPECIAL handout if required.	Open class	Group SPECIAL handout	5
- Present and share learning experiences and final product from workshop 5	Showing story	6. Group C displays a group collage.	Group C	Table 5	3
- Check SPECIAL developments in this activity	Discussion	7. Discuss the SPECIAL developments in this activity. Add notes to group SPECIAL handout if required.	Open class	Group SPECIAL handout	5

Session 15		Energising Activity			
Title		Newspaper Dance Game			
Trainees		15 childcare workers			
Duration		15 minutes		Course Aims	
Lesson Aims		1. To bridge the gap between trainers and trainees and also among trainees 2. To make trainees feel comfortable with each other 3. To increase active involvement in the training sessions			Not applicable
Materials		Newspaper Whistle Music			
Procedure Assessments & Evaluation		Observe trainees' participation during group			
LEARNING OUTCOME	ACTIVITY	PROCEDURE	GROUPING	MATERIALS	TIMING
- Understand the task	Introduction	<ol style="list-style-type: none"> <li>Ask trainees to form groups (3 people in each group).</li> <li>Tell the trainees that they will now play a game that requires cooperation and support from group members.</li> <li>Take several newspapers or big sheets of paper (one for each group) and put them on the floor in different corners of the room.</li> <li>Assign each group to a sheet of paper in one of the corners.</li> <li>Turn on the music and ask trainees to dance around their piece of newspaper. When the music stops, they have to stand inside the boundary of the paper.</li> <li>If every member of the group can stand on the paper within the boundary then fold the paper in half and ask them to stand inside the boundary of the paper now reduced in size.</li> </ol>	Group of 3	Newspaper Music	5
- To work together in order to complete a task	Mingle	<ol style="list-style-type: none"> <li>Play and stop the music and reduce the size of the paper 3-4 more times.</li> <li>If each group cannot stand on their piece of newspaper, they are out.</li> <li>Continue the exercise until no group can fit all of its members on the paper.</li> </ol>	Group of 3	Newspaper Music	10
		10. Trainees mingle and trainer observes to check understanding of task.			

Session 16	Workshop 7				
Title	A Story Bag				
Trainees	15 childcare workers				
Duration	30 minutes				
Lesson Aims	7. To focus on the importance of a story bag 8. To identify the benefits of offering a story bag 9. To know how children learn and develop through playing with a story bag 10. To allow childcare workers to reflect on, share and develop their experience of using a story bag 11. To give childcare workers new ideas and practical experience for using a story bag 12. To enable childcare workers to create their own story bag to use with their children in their workplace				
Materials	Materials from table 1-6/ Two bags				
Final Product	Present a 3-minute story bag				
Procedure Assessments & Evaluation	Observe childcare workers' participation during group discussions				
LEARNING OUTCOME	ACTIVITY	PROCEDURE	GROUPING	MATERIALS	TIMING
	Introduction	Introduce the title of the workshop and describe the activities			1
	Participating	1. Divide into 2 groups. Group A = 7 trainees, Group B = 8 trainees. 2. Ask trainees in group A to find a random 8 objects in the training room. 3. Ask trainees in group B to find a random 7 objects in the training room. 4. Each group puts their objects in separate bags. 5. The groups swap bags.	Group of 7 and group of 8	Two bags	3
- Develop a story using objects	Brainstorming Creating a story	6. Trainees look at all the objects in their bag. 7. The groups brainstorm a 3-minute oral story using the objects in the bag. 8. Each childcare worker in the group should tell one part and hold up the related object when it is mentioned in the story.	Group of 7 and group of 8		10
- Present and share learning experiences	Showing story	9. Each group shares its story with the whole class.	Open class		10
- Check SPECIAL developments in this activity	Discussion	10. Verbally apply SPECIAL developments to the story bag activity.	Open class		5

Session 17						
Title		Instructions for post-test				
Trainees		15 childcare workers				
Duration		45 minutes				Course Aims
Lesson Aims		To test knowledge and attitudes towards play and development and the environment of care				Not applicable
Materials		Test				
LEARNING OUTCOME	ACTIVITY	PROCEDURE	GROUPING	MATERIALS	TIMING	
	Move chairs	Ask the trainees to move their chairs as shown in the pre-and post-test room plan. Distribute questionnaires and read instructions on front page of test. Give the start and finish times (40 minutes): trainees should wait in their places until the finish time.	Individual	Test	5	
	Test	Trainees complete questionnaires. Trainer moves around to check understanding of task and answer any questions. Collect questionnaires and add to teaching file.	Individual	Test	40	

**Group .....****Workshop Handout**

Workshop	Task
1. Using role play in small worlds construction and home corners	<p>1. Look at the materials provided. How do you think using these <b>materials in role play benefits children's development?</b></p> <p>2. How does role play in small worlds construction and home corners contribute to child development? Complete the relevant boxes on your SPECIAL handout.</p>
2. Book corners	<p>1. What do you put in the book corner?</p> <p>2. How do you know children have read the book?</p> <p>3. How do book corners contribute to child development? Complete the relevant boxes on your SPECIAL handout.</p>
3. Outdoor play and music	<p>1. Why do you think it is important for children to have access to outdoor play space and music?</p> <p>2. What resources can enhance the music and outdoor play experience?</p> <p>3. How do outdoor play and music contribute to child development? Complete the relevant boxes on your SPECIAL handout.</p>
4. Play dough	How does play dough contribute to child development? Complete the relevant boxes on your SPECIAL handout.
5. Painting, Gluing, Collage and Drawing	<p>1. Look at the materials provided. How do you think using these <b>materials in role play benefits children's development?</b></p> <p>2. How do painting, gluing, collage and drawing contribute to child development? Complete the relevant boxes on your SPECIAL handout.</p>

Workshop	Task										
6. Play with natural materials: water, wood, clay, sand alternatives	<p>1. What is the item in each box?  <b>1</b>..... <b>2</b>..... <b>3</b>.....</p> <p><b>4</b>..... <b>5</b>.....</p> <p>2. How does this activity make you feel?</p> <p>3. How do children feel when they face new activities?</p> <p>4. How do natural materials contribute to child development?</p> <p>5. Choose 4 natural materials that children play with in the natural environment. Suggest play activities using each material.</p> <table border="1"> <thead> <tr> <th>Natural Material</th><th>Suggested Activities</th></tr> </thead> <tbody> <tr> <td>1.</td><td></td></tr> <tr> <td>2.</td><td></td></tr> <tr> <td>3.</td><td></td></tr> <tr> <td>4.</td><td></td></tr> </tbody> </table>	Natural Material	Suggested Activities	1.		2.		3.		4.	
Natural Material	Suggested Activities										
1.											
2.											
3.											
4.											

**Group.....****SPECIAL Handout**

SPECIAL Developments	Workshop 1	Workshop 2	Workshop 3
Language development	Autonomous development	Intellectual development	Creative development
Social development	Physical development	Emotional development	Physical development

**Group.....****SPECIAL Handout**

SPECIAL Developments	Workshop 4	Workshop 5	Workshop 6
Language development	Autonomous development	Intellectual development	Creative development
			Emotional development
			Physical development
			Social development

## Play Dough Recipes

	1. Uncooked long lasting dough	2. Stretchy dough	3. Textured dough
Ingredients	1.5 kilos plain flour 0.5 kilos salt 2 table spoons of oil Colouring Water as required	1.5 kilo self-raising flour Approximately 11/4 pints water To colour – add power paint to the flour or food colouring to the water	1.5 kilo plain flour 0.5 kilo salt Oats and water as required Other materials can be added for a textured effect, such as rice, pasta, lentils, wood shavings or wholemeal flour
Procedure	This is a tough dough with a nice clean, easily cut out with cutters. Keeps well in an airtight container. Put all dry ingredients together, add oil and mix with cold water until it is no longer sticky. Knead well with floured hands.	Mix flour and water together, kneading until the consistency is like that of bread dough. The lack of preserving agents gives this dough a maximum life of a couple of days, but it is great fun and well worth trying.	5. Cornflower dough To make this tray you will need  3X750 gm. cornflower Colouring or paint Water - add until you get required consistency

	4. Cooked dough	5. Sawdust dough	6. Modeling dough
Ingredients	2 cups plain flour 1 cup salt 2 cups water 2 tablespoons oil 2 teaspoons cream of water Food colouring	5 cups of fine sawdust (the type sold as pet bedding) 1 heaped cup of dry wallpaper paste (regular without fungicide) 4-5 cups of water	1 kilo self-raising flour 1 kilo salt Water as required
Procedure	Put all ingredients into a saucepan and stir well to remove any lumps. Cook over a medium heat, stirring all the time. Do not allow dough to cling to the sides and bottom of pan. Stir until it acquires a doughy texture. When it is cooked, a small piece rolled into ball does not feel sticky or leave traces on the hand. Knead well store in an air tight container.	Good modelling dough for older children. Knead to a good modelling consistency and keep in a sealed plastic container in the fridge. It will air dry and can be painted.	This is not sticky and can be dried in the oven and painted. It is an ideal modelling material for older children.

## Health and Safety Guidelines

In summary we will ensure that:

1. A risk assessment is carried out and any potential hazards are highlighted to the trainees. All training venues used are clean, well-lit and ventilated and of adequate temperature.
2. Seating arrangements meet the needs of the trainees and are conducive to the type of training that is taking place.
3. The general environment promotes an atmosphere that enables trainees to gain maximum benefit from their learning experience e.g. minimal noise and interruptions.
4. Any training equipment used (including refreshments and play resources) is well maintained, safe, appropriate and of the required standard. It is the responsibility of the tutor to ensure this, note areas of concern/hazards etc. on the Risk Assessment form and report them to the committee of Boromarajonani College of Nursing, Lampang when necessary.
5. Trainees are informed at the beginning of each course about emergency procedures, the smoking policy and their individual responsibility when using training equipment and materials.
6. Tutors will note the location of the First Aid box/Incident record/named First Aider (if one is present in the venue) on their Risk Assessment sheet at the beginning of each session and signpost this to trainees during the **'housekeeping' element of their introduction.**
7. Trainees are allowed adequate breaks throughout the training periods so as to ensure their personal comfort and wellbeing.
8. Trainees will be informed that all mobile telephones should be switched off during session/course delivery. In exceptional circumstances, mobiles may be put on silent mode, and if calls need to be taken then the trainee must leave the training venue. Course trainees must inform the tutor if they fall into this exceptional circumstance at the beginning of the session. The tutor will inform all session/course trainees about any specific conditions that apply to the venue being used.
9. Tutors will inform trainees that texting will not be tolerated during the session/course and that texting will be informed of this if it is noticed.

## Preparations for trainer's file

Page	Document name
1	Title page
2	Course description and aims
3	Training room plan
4	Course timetable (trainees)
5	Course timetable (assistants)
6	List of trainees
7	Session 1: registration and registration document day 1-4
8	Lesson plan and materials for session 2: Welcome and introduction
9	Welcome and introduction PowerPoint slide
10	<b>Assistants' training</b>
11	List of assistants
12	Lesson plan and materials for session 3: Instruction for pre-test
13	Pre- and post-test room plan
14	Answer key for knowledge multiple-choice questionnaire
15	20 copies of pre-test
16	Lesson plan and materials for session 4: Icebreaking activity
17	20 copies of Bingo sheet
18	Lesson plan and materials for session 5: The importance of play and development and the environment of care
19	Lecture slides for play and development and the environment of care
20	20 copies of questions handout for session 5
21	DVD
22	Lesson plan and materials for session 6: SPECIAL developments and adult roles
23	Lecture slides for SPECIAL developments and adult roles
24	20 copies of questions handout for session 6
25	DVD
26	Instructions for workshop 1-3
27	20 copies of workshop handout
28	20 copies of SPECIAL handout
29	5 copies of workshop handout with answer for assistants
30	Lesson plan and materials for workshop 1: Using role play in small worlds construction and home corners
31	Lesson plan and materials for workshop 2: Book corners
32	Lesson plan and materials for workshop 3: Outdoor play and music
33	Lesson plan for session 10: Show and Tell
34	Instructions for workshop 4-5
35	Lesson plan and materials for workshop 4: Play dough
36	Play dough recipes handout
37	Lesson plan and materials for workshop 5: Painting, Gluing, Collage and Drawing
38	Lesson plan and materials for workshop 6: Play with natural materials: Water, Wood, Clay, Sand and Alternatives
39	Lesson plan for session 14: Show and Tell
40	Lesson plan and materials for session 15: Energising activity
41	Lesson plan and materials for workshop 7: A Story Bag
42	Observation sheet day 1-4
43	20 copies of evaluation form
44	Lesson plan and materials for session 18: Instruction for post-test
45	Pre- and post-test room plan
46	Answer key for knowledge multiple-choice questionnaire
47	20 copies of post-test

### Preparations for trainees' file

Page	Document name
1	Title page
2	Course description and aims
3	Timetable
4	Play dough recipes
5	SPECIAL developments
6	Website addresses

### Preparations for assistant's file

Page	Document name
1	Title page
2	Course description and aims
3	Course timetable (assistants)
4	List of trainees
5	Lesson plan and materials for Workshop 1: Using role play in small worlds construction and home corners
6	Lesson plan and materials for Workshop 2: Book corners
7	Lesson plan and materials for Workshop 3: Outdoor play and music
8	Lesson plan and materials for Workshop 4: Play dough
9	Lesson plan and materials for Workshop 5: Painting, Gluing, Collage and Drawing
10	Lesson plan and materials for Workshop 6: Play with natural materials - water, wood, clay, sand and alternatives
11	Handout with answers for workshops 1-6

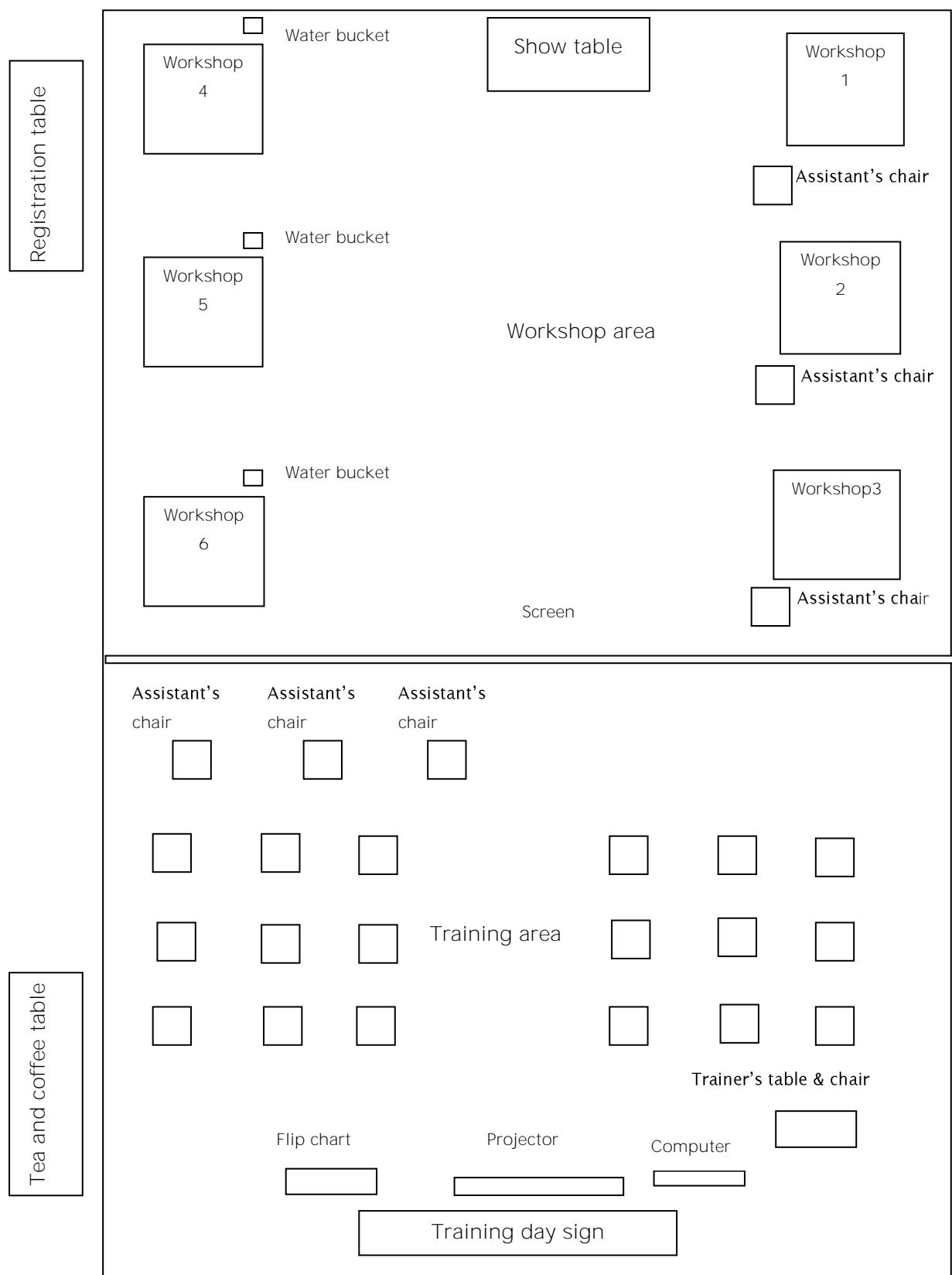
### Preparing a day before training

1. Provide a meeting room that is sufficient and functioning
2. Put up the sign showing the title of the training day in the middle room
3. Check computer and multimedia projector, overhead projector
4. Check microphones, telephones and other technology
5. Arrange 15 comfortable chairs in a semi-circle
6. **Set up trainer's table and chair**
7. Set up 8 tables and 3 chairs for the assistants
8. Check toilets and washrooms are clean
9. Set up registration table (to be used as show table after registration)
10. Organise table for tea and coffee
11. Prepare 15 training bags for trainees, including file, handouts and pen
12. Prepare 6 workshop tables
13. Prepare flip chart and coloured pens
14. Print name tags
15. Place one water bucket and towel by tables 4, 5 and 6
16. Prepare 60 certificates
17. Prepare 3 assistants

## A list of materials for one-day training

- Large meeting room
- Sign showing the title of the training day
- Laptop
- 1 DVD player
- 1 projector
- 1 microphone
- 25 chairs (3 are spare)
- 10 tables (one is spare)
- Clip boards
- 6 pens
- Tea bags, coffee, Coffeemate, sugar
- 20 cups, plates, spoons
- 1 kettle
- 5 bottles of water
- 20 glasses
- Kitchen towel
- 10 bin bags
- 15 training bags
- 15 trainee files
- 1 flip chart and 4 coloured pens
- 20 printed name tags
- Water buckets
- 6 towels
- 1 camera
- 1 video recorder
- 1 memory stick containing PowerPoint presentations
- 1 DVD
- 15 story bags
- Teaching file
- 6 assistant files
- 1 pointer
- 1 whistle
- 1 stopwatch
- 1 old newspaper
- mp3 player loaded with music for energising activity
- mp3 player speakers and connection cable
- Clay (head-size amount)
- Pebbles (enough to half-fill the box)
- Feathers (enough to half-fill the box)
- Wood shavings (enough to half-fill the box)
- Shells (enough to half-fill the box)
- Boxes
- 60 certificates

## Pre- and Post-Test Room Plan



## Appendix 3.7: Questionnaire (English-version)

### How to complete the questionnaire

Thank you for taking the time to complete the questionnaire.

The questionnaire consists of three parts.

Part I: Demographic data.

Part II: Knowledge questionnaire

Part III: Attitudes questionnaire

Please follow these instructions:

Write legibly and firmly with a pen in either black or blue ink.

Answer each question to the best of your ability.

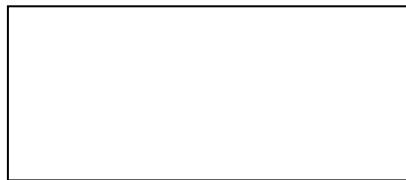
Help to make this research a success by answering the questions individually.

Return the completed questionnaires to the trainer.

Should you have any difficulties in completing the questionnaire or have any other questions regarding this survey, please do not hesitate to contact your trainer.

Thank you for your cooperation.

## Questionnaire Part I



1. Name of childcare centre.....
2. Work address.....  
.....
3. Name (Mr./Ms./Mrs.) .....
4. Age .....year
5. Status    Single                            Married  
   Widowed    Divorced
6. Educational level
  - Primary school
  - High school
  - Graduate of technical college
  - Graduate degree of .....
  - Master degree of .....
  - Specific certificated degree of .....
7. Are you studying?    No    Yes (If Yes please answer number 5)
8. Study level .....
9. Working experience.....years

## Questionnaire Part II

This part contains 20 multiple choice questions (MCQ). Each question shows FOUR possible answers (letter 'a', 'b', 'c', and 'd'). Only ONE is correct. Decide which one is correct and mark your answer on the letter by crossing or circling with your pen.

These MCQ questionnaires have been sourced from the Council for Awards in Care, Health and Education (2010).

	0. A group of children are climbing a tree with the help of a childcare worker. What play type is this? a deep play b social play <input checked="" type="radio"/> c locomotor play d rough and tumble play
1	Who should determine the content of play? a curriculum designers b childcare workers c parents and carers d children
2	The MAIN reason why children should be able to play without interruption is to a learn from each other b control their own play c manage risk for themselves d develop independence and responsibility
3	A child aged 3 years is playing with a hoop alongside a child aged 4 years who is playing with a pop-up toy. What type of play is this? a parallel b solitary c associative d co-operative
4	The childcare worker can support choices in play for children by a organising a sports event b planning a programme of activities c providing a range of materials d providing recipes for cookery activities
5	It is important for childcare workers to support children's play to a help children stay clean b show children what to do c help children behave positively d give children encouragement
6	It is MOST important for childcare workers to support children's learning to a provide new equipment b meet each child's learning needs c give all children the same activities d encourage children to make friends
7	Childcare workers should show interest in children's activities to a support children in their play b help children to finish all activities c make sure children talk to the adult d be able to change activities frequently
8	How will childcare workers know if a play session has gone on too long? a the childcare worker needs to help most of the children b the materials and equipment are not all used c the children have lost interest and started to argue d the children have become increasingly more excited

9	A group of children are arguing while playing a game. How should the childcare worker respond? a let the children continue without interruption b intervene immediately to resolve the problem c observe the play but intervene if needed d suggest that the children start a new game
10	What should childcare workers do when children are playing? a clean toys b make snacks c have a meeting d join in the play
11	How can the childcare worker learn about children's interests? a observe the children b play with the children c send letters to the parents d take the children on an outing
12	A child aged 4 years is getting frustrated while trying to make a collage. What should the childcare worker do? a take away all the materials b ask another child to join in c become involved in the activity d find something else for the child to do
The following questions each have two correct answers. Circle the letter (a-d) which represents the two correct answers for example:	
13	0. It is important to agree childcare worker duties and responsibilities in the setting to reduce: 1 cost 2 conflicts 3 accidents 4 daily tasks a 1 and 3 correct b 1 and 4 correct c 2 and 3 correct d 2 and 4 correct
14	What is the BEST way to arrange activities to encourage children to play? 1 use a plan 2 have enough space 3 provide familiar equipment 4 make them look attractive a 1 and 2 correct b 1 and 3 correct c 2 and 4 correct d 3 and 4 correct
15	It is MOST important to have a variety of activities for children to 1 give parents ideas for play 2 help children make choices 3 encourage children's learning 4 provide pictures for displays a 1 and 2 correct b 1 and 4 correct c 2 and 3 correct d 3 and 4 correct
16	A group of children start a water fight when watering plants in the outdoor area. What should the childcare worker do? a stop the game for everyone to get changed b encourage them to spray the water at the plants c remove possible hazards while the play continues d take shelter inside and observe the children
17	When using a water tray at childcare centre it is MOST important to a provide warm water b change the water regularly c add some colour to the water d fill the water tray up to the top

17	Children are playing with sand outdoors. What should childcare workers check FIRST? a the sand is clean <b>b the children's clothing is protected</b> c the sand is in a large enough container d there is a range of stimulating tools
18	Childcare workers who are organising activities in the childcare centre should 1 make sure all equipment used is in good condition 2 put out different activities every day 3 give all children the same activity 4 arrange activities in an attractive way a 1 and 2 correct      b 1 and 4 correct c 2 and 3 correct      d 3 and 4 correct
19	How should childcare workers show an interest when children are playing with sand? 1 offer extra equipment 2 sweep up spilt sand 3 talk to the children 4 make sure sand is clean a 1 and 2 correct      b 1 and 3 correct c 2 and 4 correct      d 3 and 4 correct
20	During play a childcare worker can promote a child's self-esteem by 1 praising the child 2 singing to the child 3 reading to the child 4 encouraging the child a 1 and 2 correct      b 1 and 4 correct c 2 and 3 correct      d 3 and 4 correct
21	Childcare workers should communicate with children during an activity to 1 tell the children to take turns 2 support the children's learning 3 make sure children finish the activity 4 encourage the children's language development a 1 and 2 correct      b 1 and 3 correct c 2 and 4 correct      d 3 and 4 correct
22	A childcare worker finds unsafe equipment when preparing for outdoor play. What is the FIRST action? a keep the children indoors b report the equipment to the supervisor c remove the equipment to a secure place d tell the children the equipment is dangerous
23	Children who have opportunities to assess risk for themselves are MOST likely to 1 respond positively to new challenges 2 extend their learning and development 3 need less adult supervision during play 4 increase their imagination and creativity a 1 and 2 correct      b 1 and 4 correct c 2 and 3 correct      d 3 and 4 correct
24	To support their own personal safety, children need to learn to assess and manage risk. The childcare worker can promote this by 1 enabling children to experiment and plan their own play opportunities 2 providing play opportunities that are free from risk 3 encouraging children to try out new situations and to understand their personal limitations 4 helping children to choose from play opportunities which childcare workers provide a 1 and 2 correct      b 1 and 3 correct c 2 and 4 correct      d 3 and 4 correct

25	Children aged 4 years are playing with a wheeled cart. The childcare worker sees that a wheel is insecure. The FIRST actions the childcare worker should take are to 1 tell the children the cart is unsafe for play 2 involve the children in deciding what to do with the cart 3 encourage the children to investigate the insecure wheel 4 ask the children to finish playing with the cart immediately a 1 and 2 correct      b 1 and 4 correct c 2 and 3 correct      d 3 and 4 correct
----	--

## Questionnaire Part III

## Statements

Below is a list of thirty six statements. Some of these you might agree with and others you might even find offensive. These statements are designed to provoke a response.

They do not necessarily reflect the opinions of the survey organisers. Please indicate what your Attitudes is to each statement by ticking one of the numbers from 1 – 4:

1 = you Strongly Disagree with the statement

2 = you Disagree with the statement, but not very strongly

3 = you Agree with the statement, but not very strongly

4 = you Strongly Agree with the statement

Please try to answer all the questions and give your first thoughts on each statement.

No	Questions relating to the play environment	Strongly Agree	Agree	Disagree	Strongly Disagree
		4	3	2	1
1.	It is difficult to learn how to use play in the classroom.				
2.	Children participate in activities when I use toys or material aids.				
3.	My childcare centre does not support me when I ask for new equipment.				
4.	I try to bring alternative materials into activities.				
5.	I would like to learn more about new developments in the play environment.				
6.	I think the play <b>environment enriches children's learning and development.</b>				
7.	It is not easy to provide a suitable play environment in the classroom.				
8.	I always try to persuade my colleagues to use new alternative play in activities.				
9.	I share my experiences of play with my colleagues.				
10.	There is a relationship between a successful activity and use of the play environment.				
11.	I am very willing to provide the play environment.				
12.	I accept the importance of the play environment				

No	Questions relating to the play environment	Strongly Agree	Agree	Disagree	Strongly Disagree
		4	3	2	1
	in teaching children.				
13.	I am not interested in using the play environment in activities.				
14.	Children accept the importance of play activities in my childcare centre.				
15.	I do not have enough knowledge about the play environment.				
16.	I think using play activities in class has little <b>effect on children's learning.</b>				
17.	I can easily get the necessary equipment whenever needed.				
18.	Using a play environment makes learning more interesting.				
19.	Children learn better when I use play in the activity.				
20.	Using educational play activities in teaching makes it more interesting for the children.				
21.	<b>My childcare centre's budget is inadequate for buying necessary materials.</b>				
22.	Other teachers at my childcare centre always support me to provide necessary play equipment.				
23.	Play activities make learning boring for children.				
24.	Children pay more attention when I use play in the activity.				
25.	The play environment has an important place in learning.				
26.	In-service activities have helped me and improved my skills in developing the play environment.				
27.	Play activities have a large influence on <b>children's motivation.</b>				
28.	The play environment is easy to create at my childcare centre.				
29.	I follow new developments in the use of the play environment.				
30.	I am not convinced about the value of the play environment when working with children.				
31.	Childcare workers must undertake a difficult training course to fully understand the use of the play environment.				
32.	I can get enough support easily in finding necessary equipment.				
33.	My colleagues share my positive opinions on the use of the play environment.				
34.	A child can learn easily without the play environment.				
35.	My children find use of play activities boring.				
36.	I always try to discover new ways for effective teaching.				

## Appendix 3.8: Permission letter from Dr. Sairudee Vorakitphokatorn

Dear Dr.Glasper

**It's pleasure to receive you kind letter** requesting to use one episode of my TV program for preschool and kindergarten children, " Po Pla Ta Glom". I am delighted to grant my permission with my best wishes to you and your student.

If you have any suggestion and ideas for me to improve the program please do so at my e-mail address sairudeevo@hotmail.com Thank you very much.

Sincerely yours,

Associate Professor Sairudee Vorakitphokatorn , Ph.D.

Director of National Institute for Child and Family Development

Mahidol University, Thailand

## Appendix 3.9: Criteria for choosing the assistants and training

The assistants must be:

1. Paediatric nurse instructors.
2. Available to attend two Saturdays' training and be on-call for the remaining two Saturdays.
3. Available to attend a one-hour training session.

### Assistants' Training

Title		Assistants' Training			
Trainees		6 assistants			
Duration		60 minutes			
Lesson Aims		1. To explain the proceedings for the training day 2. To clarify the details of lesson plans for workshops 1-6			
Materials		6 assistant files A teaching file Sample materials for the workshops 1-6			
Final Product		Not applicable			
LEARNING OUTCOME	ACTIVITY	PROCEDURE	GROUPING	MATERIALS	TIMING
- To explain the proceedings for the training day - To clarify the details of lesson plans for workshops 1-6	Instruction	11. Present and discuss the course aims. 12. Present and discuss the timetable.	Open class	6 assistant files A teaching file Sample materials for the workshops 1-6	15
		13. Explain the procedure for each workshop. 14. Demonstrate using the sample materials. 15. Check understanding of SPECIAL developments.			30
		16. Answer any questions about the training or procedure.			15

## Appendix 3.10: Observational visit guide

**Observation Sheet Day.....**

If yes...why? If no...why not?

Considerations	Yes	No	Comments
1. Do the trainees use the materials from the workshop? Why or why not?			
2. Do the trainees participate in group activities? Why or why not?			
3. Do the trainees contribute to group discussions? Why or why not?			
4. Do the trainees seem to enjoy the activities? Why or why not?			
5. Did the trainees feel confident and comfortable during the show and tell activities? Why or why not?			
6. Did I follow the multimedia teaching package plan? Why or why not?			
7. Did the day follow the timings set out in the course timetable? Why or why not?			
8. Did the trainer have any technical problems? Why or why not?			
9. Did any accidents occur during the day? Why or why not?			
10. Were the facilities adequate? Why or why not?			
11. Were the assistants well-prepared? Why or why not?			
12. Did any other problems arise during the training day? Why or why not?			

## Appendix 3.11: Certificate Ethical approval of Lampang Hospital



### **Certificate of Approval Ethical Review Committee for Human Research Lampang Hospital, Thailand**

**Protocol Title :** Will a multimedia teaching package promoting practical aspects of play and the play environment improve Thai nursery workers' abilities to promote child development?

**Principal Investigator :** Mrs Somprathana Sudjainark

**Affiliation :** Boromarajonani College of Nursing Nakorn Lampang

**Approval Includes :**

1. Project proposal
2. Information sheet
3. Informed consent form
4. Data collection form, Program and Activity plan

The aforementioned project have been reviewed and approved according to the Declaration of Helsinki by Ethical Review Committee for Human Research, Lampang Hospital, Thailand.

(Umaporn Pongpan, M.D.)

**Chairman of Ethical Review Committee for Human Research  
Lampang Hospital, Thailand**

Date of Approval.....28 February 2011.....

## Appendix 3.12: Permission to Conduct this Research

This study was carried out in two different places: the first will be the Department of Local Administration (DLA) for nursery workers in Nonthaburi which provides official training for the whole country. This will be the control group. The second will be in Lampang city, where the teaching package training will take place. The researcher has contacted both organisations for a permission letter to conduct this research. The permission from the Lampang Provincial Local Administration Office and the Department of Local Administration (DLA) at Bangkok has been received. These letters show that they allow and are willing for the researcher to conduct this research in Mueang Lampang and Nonthaburi.



ที่ นท ๐๔๙๙.๔/๑๙

ถึง วิทยาลัยพยาบาลบรมราชชนนี นครศรีฯ

ตามที่วิทยาลัยพยาบาลบรมราชชนนี นครศรีฯ ขออนุญาตให้นางสมปราดนา สุตใจนาค ผู้อำนวยการในสังกัดวิทยาลัยพยาบาลบรมราชชนนีฯ ศึกษาวิจัยในโครงการอบรมเชิงปฏิบัติการผู้ดูแลเด็กคุณย์ พัฒนาเด็กเล็ก ขององค์กรปกครองส่วนท้องถิ่น ประจำปี ๒๕๕๙ นั้น

กรมส่งเสริมการปกครองท้องถิ่น พิจารณาอนุญาตให้นางสมปราดนา สุตใจนาค เข้าศึกษาวิจัย ในโครงการอบรมเชิงปฏิบัติการผู้ดูแลเด็กคุณย์ พัฒนาเด็กเล็ก ขององค์กรปกครองส่วนท้องถิ่น ประจำปี ๒๕๕๙ และได้ลงนามในหนังสือแสดงความยินยอมหรืออนุญาตของสถาบันที่ทำการศึกษาวิจัยแล้ว ตามเอกสารที่แนบ  
พัฒนา



สำนักประศาสนและพัฒนาการจัดการศึกษาท้องถิ่น  
สำนักส่งเสริมการศึกษานอกระบบและพัฒนาการในส่วนราชการ  
โทร. ๐-๒๖๐๔-๒๖๐๔๗๗ ต่อ ๑๐๖๔-๑๐๖๕  
โทรสาร ๐-๒๖๐๔-๒๖๐๔๗๗ ต่อ ๑๐๖๔-๑๐๖๕



ที่ บป ๐๐๗๗.๗/ ๑๗๕๗

สำนักงานส่งเสริมการปกครองท้องถิ่นจังหวัด  
ศรีสะเกษจังหวัดสำราญ  
ถนนวิชราภูมิ ตำบล ๗๖๐๐๐

(๙) อันวาระ ๒๕๕๒

เรื่อง ขอความอนุเคราะห์ขอเก็บข้อมูลเพื่อการศึกษาวิจัยในผู้ดูแลเด็ก ของศูนย์พัฒนาเด็กเล็กในอำเภอเมืองสำราญ

เรียน ผู้อำนวยการวิทยาลัยพยาบาลบรมราชชนนี นครสำราญ

อ้างถึง หนังสือวิทยาลัยพยาบาลบรมราชชนนี นครสำราญ ที่ ศศ ๐๐๗๗.๐๗๗/ ๒๕๕๒ ลงวันที่ ๑๙  
พฤษภาคม ๒๕๕๒

สิ่งที่ส่งมาด้วย ๑. สำเนาหนังสือสำนักงานส่งเสริมการปกครองท้องถิ่นจังหวัดสำราญ ที่ บป ๐๐๗๗.๗/ ๑๗๕๗/  
ลงวันที่ ๙/ อันวาระ ๒๕๕๒  
๒. สำเนาหนังสือสำนักงานส่งเสริมการปกครองท้องถิ่นจังหวัดสำราญ ที่ บป ๐๐๗๗.๗/ ๑๗๕๗/  
ลงวันที่ ๙/ อันวาระ ๒๕๕๒

ตามที่วิทยาลัยพยาบาลบรมราชชนนี นครสำราญ แจ้งว่าข้าราชการในสังกัดศศ นางสมปราถนา  
สุตใจนาค ตำแหน่งพยาบาลวิชาชีพชำนาญการ ได้รับทุนพัฒนาอาจารย์ของวิทยาลัย ตั้งแต่การทัศนศึกษา  
สถาบันพระบรมราชชนก กระทรวงสาธารณสุข ศึกษาดูในระดับปริญญาเอก สาขาวิชาพยาบาลเด็ก ณ Faculty of  
Health Sciences, the University of Southampton ประเทศสหราชอาณาจักร ปัจจุบันกำลังศึกษาวิทยานิพนธ์  
ซึ่งในการศึกษาดูแลเด็กผู้ดูแลเด็กเล็กในศูนย์พัฒนาเด็กเล็กอำเภอเมืองสำราญ  
จังหวัดสำราญ ในการศึกษาวิจัยครั้งนี้จะต้องไปรับการพิจารณาและอนุมัติจากคณะกรรมการพิจารณาการศึกษาวิจัยใน  
ศศ กระทรวงสาธารณสุข และจะต้องแนบหนังสือแสดงความยินยอมหรืออนุญาตของสถาบันที่ทำการศึกษาวิจัยส่งไป  
พร้อมกับโครงการวิจัยด้วย นั้น

สำนักงานส่งเสริมการปกครองท้องถิ่นจังหวัดสำราญ ได้ประสานสำนักงานส่งเสริมการปกครองท้องถิ่น  
อำเภอเมืองสำราญ เทศบาลนครสำราญ และเทศบาลเมืองเหลาทันครา ในการอนุญาตให้ศึกษาวิจัยเข้าศึกษาวิจัย  
เด็กด้วยระบบดิจิทัล รายละเอียดความสำนักงานศึกษาที่แนบท้ายด้วย

จึงเรียนมาเพื่อโปรดทราบ

ขอแสดงความนับถือ

(นายบุญพร ชินทร์)  
ห้องถิ่นจังหวัดสำราญ

กลุ่มงานส่งเสริมและพัฒนาท้องถิ่น  
โทร./โทรสาร ๐ ๕๖๗๖ ๕๐๘๘

## Appendix 3.13: Participant Information Sheet: for Nonthaburi Control Group

### Participant Information Sheet: for Bangkok Control Group

Research Title: Promoting child development in Thai nurseries

Researcher: Mrs. Sompratthana Sudjainark, a student from the University of Southampton, United Kingdom is undertaking the project. She is conducting this research as part of her MPhil/PhD study, under the supervision of Professor Edward Alan Glasper and Dr. Peter Nicholls from the Faculty of Health Sciences.

Ethics number:

*Please read this information carefully before deciding to take part in this research. If you are happy to participate you will be asked to sign a consent form.*

What is the research about?

This research is a study about training nursery workers who work in childcare centres under the Subdistrict Administrative Organisation. This study aims to evaluate the **effectiveness of multimedia teaching package training. Nursery workers' knowledge of** and Attitudes towards the play environment will be evaluated. The researcher plans to compare effectiveness of training between the multimedia teaching package training in Mueang Lampang and the official training in Nonthaburi. Then, this study will compare similarities between nursery workers who attend and do not attend training in Mueang Lampang in Thailand.

Why have I been chosen?

You have been invited to take part in this study because you are closely caring for children in a childcare centre under the Subdistrict Administrative Organisation. Additionally, you have experience of taking care of and providing health care support during early childhood in childcare centres. All information will be useful to improve the multimedia teaching package and child development.

What will happen to me if I take part?

If you decide to participate, you will be asked to complete the pre-test multiple choice questionnaires about the knowledge of and Attitudes towards the play environment in the first day before accessing the official training. After official training, the sixth day, the research assistant will distribute and collect the post-test multiple choice

questionnaires again. Then, after four weeks training, you will receive the questionnaires by post with an empty, stamped-addressed envelope to return to the researcher when you have completed the questionnaire.

Before taking part in this research project, you will be asked to sign a consent form. You will be given an information sheet which provides details of this study and you will be offered a further opportunity to ask questions or seek clarification on any matter. The details of the consent form cover your voluntary participation in the study.

Participation in the study is entirely up to you, you are not obliged to take part in any way. You can withdraw from this study at any time and for any reason. Your decision to participate in this study will not affect your role and duty in your childcare centre.

Are there any benefits in my taking part?

There may not be any direct benefit to you, but your information may help to measure the overall knowledge of and attitudes towards the play environment and may be useful in a further study to develop a training programme.

Will my participation be confidential?

Yes. Your identification during the process of research will be kept strictly confidential. We will follow the ethical and legal practices. Information about your name and address will be deleted. Raw data and all hard copies will be kept in a locked cabinet. All electronic records and transcripts will be kept on a password protected computer. Code data will be stored electronically at the Faculty of Health Science, University of Southampton, United Kingdom. Only the research student and supervisor will have access to the data by using a secure password. We will keep your information secure for ten years in the University data protection system. Then all recordings will be destroyed.

What happens if I change my mind?

You have the right to withdraw from the study at any time without having to give any reason and without penalty. If you withdraw from this study, we will destroy all data that identifies you. Information collected may still be used up to your withdrawal.

What will happen to the result of the research study?

The results of the study will be disseminated in several ways, including a PhD thesis, presentations at local, national and international conferences and writing papers for publication. Data reported will be in summary form and it will not be possible to identify participants or individuals. You will be asked at the end of the study if you wish to receive a summary of the findings.

What can I do if I have any concerns?

If you have any concern about any aspect of this study, you can ask questions and seek clarification from the researcher who will provide the best information of this study.

***The researcher's contact details:***

***Mrs. Sompratthana Sudjainark***

***Boromarajonani College of Nursing, Lampang***

***268 Pa-kam Road Tambon Hua Wiang,***

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***Thailand, 52000***

***Tel: +66(0)54 226 254 or +66(0)54 218 788***

***Fax: +66(0)54 225 020***

***E-mail address: ss10e08@soton.ac.uk or joawjom@hotmail.com***

If you are still unhappy and wish to complain formally, you can contact the Ethical Review Committee for Research on Human Subjects, Lampang Hospital who will be approving this research project.

***Contact details:***

***Ethical Review Committee for Research***

***Lampang Hospital***

***280 Phahon Yothin Road Tambon Wiang Nuea***

***Mueang Lampang, Lampang Province***

***Thailand, 52000***

***Tel. +66 (0)54 223 621-31 or +66 (0)54 223 910***

***Fax: +66 (0)54 226 126***

Or you can contact Susan Rogers, Head of Research & Enterprise Services, at the Faculty of Health Sciences, who can provide you with details of the University of Southampton Complaints Procedure.

***Contact details:***

***Susan Rogers***

***Building 67, Faculty of Health Sciences,***

***University of Southampton,***

***Highfield, Southampton,***

***SO17 1BJ United Kingdom***

***Tel: +44 (0)23 8059 7942***

***Email: S.J.S.Rogers@soton.ac.uk***

Thank you for considering taking part in the study

## Appendix 3.14: Participant Information Sheet: for Lampang Intervention Group

### Participant Information Sheet: for Lampang Intervention Group

Research Title: Promoting child development in Thai nurseries

Researcher: Somprathana Sudjainark, a student from the University of Southampton, United Kingdom is undertaking the project. She is conducting this research as part of her MPhil/PhD study, under the supervision of Professor Edward Alan Glasper and Dr. Peter Nicholls from the Faculty of Health Sciences

Ethics number:

*Please read this information carefully before deciding to take part in this research. If you are happy to participate you will be asked to sign a consent form.*

What is the research about?

This research is a study about training nursery workers who work in childcare centres under the Subdistrict Administrative Organisation. This study aims to evaluate the **effectiveness of multimedia teaching package training**. **Nursery workers' knowledge of** and Attitudes towards the play environment will be evaluated. The researcher plans to compare effectiveness of training between the multimedia teaching package training in Mueang Lampang and the official training in Nonthaburi. Then, this study will compare similarities between nursery workers who attend and do not attend training in Mueang Lampang in Thailand.

Why have I been chosen?

You have been invited to take part in this study because you are closely caring for children in a childcare centre under the Subdistrict Administrative Organisation. Additionally, you have experience of taking care of and providing health care support during early childhood in childcare centres. All information will be useful to improve the multimedia teaching package and child development.

What will happen to me if I take part?

If you decide to participate, you will be invited to one of a four day training programme. This programme involves one full-day training on Saturdays (six hours

per group) for four groups (15 nursery workers per group) at Boromarajonani College of Nursing, Lampang in Lampang Province where you can conveniently travel.

The training process emphasises your knowledge and attitudes pertinent to the play environment by allowing you to participate in every activity during the training. You are given freedom to express your ideas and thoughts in the training activities to gain the most from the learning process. Before and after finishing training, you will be tested. You will then receive a teaching pack with homework.

The homework task will be followed up two weeks later by the researcher in each group's **childcare centre**. Any issues will be resolved at this point. Four weeks later, to study the knowledge and Attitudes retention, the researcher will re-test you at your childcare centre (follow up-test). After computing the means score of knowledge and attitudes, the researcher will invite you for an interview to discuss your opinions on multimedia teaching package training. The results of the analysis will be consolidated to find solutions for problem and suitable adjustments to the programme for its further development.

Before taking part in this research project, you will be asked to sign a consent form. You will be given an information sheet which provides details of this study and you will be offered a further opportunity to ask questions or seek clarification on any matter. The details of the consent form cover your voluntary participation in the study.

Participation in the study is entirely up to you, you are not obliged to take part in any way. You can withdraw from this study at any time and for any reason. Your decision to participate in this study will not affect your role and duty in your childcare centre.

Are there any benefits in my taking part?

There may not be any direct benefit to you, but your information may help to measure the overall knowledge of and attitudes towards the play environment and may be useful in a further study to develop a training programme.

#### Advantages

- You will be given information about the play environment.
- You will learn how to play with children and how to arrange the environment.
- You will get some idea to apply in your daily working.
- You will get some help from the researcher to adjust a teaching pack for playing with children in childcare centres.

#### Disadvantages

- You will spend one day on Saturday in the multimedia teaching package training.

- You will spend around 30 minutes completing the three occasion multi-choice questionnaires.
- You may be invited to interview about your opinions on multimedia teaching package training.

Will my participation be confidential?

Yes. Your identification during the process of research will be kept strictly confidential. We will follow the ethical and legal practice. Information about your name and address will be deleted. Raw data and all hard copies will be kept in the locked cabinet. All electronic records and transcripts will be kept on a password protected computer. Code data will be stored electronically at the Faculty of Health Science, University of Southampton, United Kingdom. Only the research student and supervisor will have access to the data by using a secure password. We will keep your information secure for ten years in the University data protection system. Then all recordings will be destroyed.

What happens if I change my mind?

You have the right to withdraw from the study at any time without having to give any reason and without penalty. If you withdraw from this study, we will destroy all data that identifies you. Information collected may still be used up to your withdrawal.

What will happen to the result of the research study?

The results of the study will be disseminated in several ways, including a PhD thesis, presentations at local, national and international conferences and writing papers for publication. Data reported will be in summary form and it will not be possible to identify participants or individuals. You will be asked at the end of the study if you wish to receive a summary of the findings.

What can I do if I have any concerns?

If you have any concern about any aspect of this study, you can ask questions and seek clarification from the researcher who will provide the best information of this study.

*The researcher's contact details:*

*Mrs. Sompratthana Sudjainark*

*Boromarajonani College of Nursing, Lampang*

*268 Pa-kam Road Tambon Hua Wiang,*

*Mueang Lampang, Lampang Province*

*Thailand, 52000*

*Tel: +66(0)54 226 254 or +66(0)54 218 788*

*Fax: +66(0)54 225 020*

*E-mail address: ss10e08@soton.ac.uk or joawjom@hotmail.com*

If you are still unhappy and wish to complain formally, you can contact the Ethical Review Committee for Research on Human Subjects, Lampang Hospital who will be approving this research project.

*Contact details:*

*Ethical Review Committee for Research  
Lampang Hospital  
280 Phahon Yothin Road Tambon Wiang Nuea  
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Or you can contact Susan Rogers, Head of Research & Enterprise Services, at the Faculty of Health Sciences, who can provide you with details of the University of Southampton Complaints Procedure.

*Contact details:*

*Susan Rogers  
Building 67, Faculty of Health Sciences,  
University of Southampton,  
Highfield, Southampton,  
SO17 1BJ United Kingdom  
Tel: +44 (0)23 8059 7942  
Email: S.J.S.Rogers@soton.ac.uk*

Thank you for considering taking part in the study

## Appendix 3.15: Participant Information Sheet: for Lampang Control Group

### Participant Information Sheet: for Lampang Control Group

Research Title: Promoting child development in Thai nurseries

Researcher: Mrs. Sompratthana Sudjainark, a student from the University of Southampton, United Kingdom is undertaking the project. She is conducting this research as part of her MPhil/PhD study, under the supervision of Professor Edward Alan Glasper and Dr. Peter Nicholls from the Faculty of Health Sciences

Ethics number:

***Please read this information carefully before deciding to take part in this research. If you are happy to participate you will be asked to sign a consent form.***

What is the research about?

This research is a study about training nursery workers who work in childcare centres under the Subdistrict Administrative Organisation. This study aims to evaluate the **effectiveness of multimedia teaching package training. Nursery workers' knowledge of** and Attitudes towards the play environment will be evaluated. The researcher plans to compare effectiveness of training between the multimedia teaching package training in Mueang Lampang and the official training in Nonthaburi. Then, this study will compare similarities between nursery workers who attend and do not attend training in Mueang Lampang in Thailand.

Why have I been chosen?

You have been invited to take part in this study because you are closely caring for children in a childcare centre under the Subdistrict Administrative Organisation. Additionally, you have experience of taking care of and providing health care support during early childhood in childcare centres. All information will be useful to improve the multimedia teaching package and child development.

What will happen to me if I take part?

If you decide to participate, you will be asked to complete the pre-test multiple choice questionnaires about the knowledge of and Attitudes towards the play environment in the first day meeting at **childcare centre. After four weeks' working, the research** assistant will distribute and collect the post-test multiple choice questionnaires again.

Before taking part in this research project, you will be asked to sign a consent form. You will be given an information sheet which provides details of this study and you will be offered a further opportunity to ask questions or seek clarification on any matter. The details of the consent form cover your voluntary participation in the study.

Participation in the study is entirely up to you, you are not obliged to take part in any way. You can withdraw from this study at any time and for any reason. Your decision to participate in this study will not affect the role and duty in childcare centre.

Are there any benefits in my taking part?

There may not be benefit to you directly but your information may help to measure the knowledge and Attitudes in overall about the play environment and may be useful in a further study to develop a training programme.

Will my participation be confidential?

Yes. Your identification during the process of research will be kept strictly confidential. We will follow the ethical and legal practice. Information about your name and address will be deleted. Raw data and all hard copies will be kept in the locked cabinet. All electronic records and transcripts will be kept on a password protected computer. Code data will be stored electronically at the Faculty of Health Science, University of Southampton, United Kingdom. Only the research student and supervisor will have access to the data by using a secure password. We will keep your information secure for ten years in the University data protection system. Then all recordings will be destroyed.

What happens if I change my mind?

You have the right to withdraw from the study at any time without having to give any reason and without penalty. If you withdraw from this study, we will destroy all data that identifies you. Information collected may still to be used up to your withdrawal.

What will happen to the result of the research study?

The results of the study will be disseminated in several ways, including a PhD thesis, presentations at local, national and international conferences and writing papers for publication. Data reported will be in summary form and it will not be possible to identify participants or individuals. You will be asked at the end of the study if you wish to receive a summary of the findings.

What can I do if I have any concerns?

If you have any concern about any aspect of this study, you can ask questions and seek clarification from the researcher who will provide the best information of this study.

*The researcher's contact details:*

*Mrs. Sompratthana Sudjainark*

*Boromarajonani College of Nursing, Lampang*

*268 Pa-kam Road Tambon Hua Wiang,*

*Mueang Lampang, Lampang Province*

*Thailand, 52000*

*Tel: +66(0)54 226 254 or +66(0)54 218 788*

*Fax: +66(0)54 225 020*

*E-mail address: ss10e08@soton.ac.uk or joawjom@hotmail.com*

If you are still unhappy and wish to complain formally, you can contact the Ethical Review Committee for Research on Human Subjects, Lampang Hospital who will be approving this research project.

*Contact details:*

*Ethical Review Committee for Research*

*Lampang Hospital*

*280 Phahon Yothin Road Tambon Wiang Nuea*

*Mueang Lampang, Lampang Province*

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Or you can contact Susan Rogers, Head of Research & Enterprise Services, at the Faculty of Health Sciences, who can provide you with details of the University of Southampton Complaints Procedure.

*Contact details:*

*Susan Rogers*

*Building 67, Faculty of Health Sciences,*

*University of Southampton,*

*Highfield, Southampton,*

*SO17 1BJ United Kingdom*

*Tel: +44 (0)23 8059 7942*

*Email: S.J.S.Rogers@soton.ac.uk*

Thank you for considering taking part in the study

## Appendix 3.16: Consent Form

### CONSENT FORM

Research Title: Promoting child development in Thai nurseries

Researcher name: Sompratthana Sudjainark

Contact detail: Boromarajonani College of Nursing, Lampang

268 Pa-kam Road Tambon Hua Wiang,

Mueang Lampang, Lampang Province, Thailand, 52000

Tel: +66(0)54 226 254 or +66(0)54 218 788 Fax: +66(0)54 225 020

E-mail address: ss10e08@soton.ac.uk or joawjom@hotmail.com

Ethics reference:

### Explanation of Procedures

You are invited to participate in a study to evaluate the effectiveness of multimedia teaching package training by comparing the knowledge of and Attitudes towards the play environment of nursery workers in Mueang Lampang and the official training in Nonthaburi groups.

This discovery from this study will help the researcher establish the multimedia teaching package to improve Thai nursery workers promote child development in childcare centres.

### Statement of Agreement to Participate in this Research Study

You have read this consent form in a language that you can speak, and its contents have been explained to you. Your rights and privacy will be maintained. You will be given a copy of this consent form.

Please tick  the boxes if you agree with the statement(s).

**If you do not agree with a statement, please a “X” in the appropriate box.**

## Statement of Agreement to Participate in this Research Study

I have read and understood the participant information sheet and have had the opportunity to ask questions about the study and have had these answered to my satisfaction.	
I agree to take part in this research project and agree for my data (i.e. demographic data, results from collected in this research study) to be used for the purpose of this study.	
I understand that my participation is voluntary and I may withdraw at any time without my legal rights or health care being affected.	
I understand that if I withdraw from the study, no further data will be collected from or in relation to me, and any data already collected will be destroyed, unless I specifically ask to keep any such data, already collected, in the study.	
I agree for my data to be stored confidentially at the University of Southampton, Faculty of Health Sciences, for 10 years, in accordance with university policy. All information which contains personal data participants in the study (such as name, contact details, etc., and code breaker linking participants names to participants' codes) will be destroyed within 10 years after the completion of this study.	
I agree that my anonymous data may be used by other researchers, including non-University of Southampton researchers, for the purposes of research in the future.	
I agree to allow the researcher to share (publish or present) the results of research study and use direct quotes in research reports and publications, provided that my name and other identifying information are kept confidential.	
I would like to have a summary of the final report sent to me and/or my representative (named below) at the completion of the study.	

I have read the above carefully and understand it clearly. I am willing to be a participant

Name of participant (print name).....

Signature of participant.....

Name of Researcher (print name) ... Sompratthana Sudjainark.....

Signature of Researcher.....

Date.....

Contact details of participant.....

Appendix 4.1: Comparison of Differences between the Demographic Data in the Three Groups (ANOVA)

Demographic Data	Lampang intervention (n=65)	Lampang control (n=61)	Nonthaburi control (n=100)	F	df	p-value
	Mean (sd)	Mean (sd)	Mean (sd)			
Age	39.29 (7.27)	39.15 (7.95)	34.34 (5.34)	14.840*	223	<0.001
Years of work experience	11.02 (8.18)	12.89 (8.50)	8.56 (5.17)	7.323**	223	0.001
Number of children per nursery worker	14.93 (4.16)	14.22 (6.13)	17.55 (4.80)	9.988**	223	<0.001

\*\* Significance at p<0.01

**Appendix 4.2: Comparison of the Numbers and Percentage of Demographic Data in the Three Groups (Chi-Square)**

Demographic Data	Lampang intervention n (n=65)	Lampang control n (n=61)	Nonthaburi control n (n=100)	$\chi^2$	df	p-value
	n (%)	n (%)	n (%)			
Education level				7.68*	2	0.021
No degree in Early Childhood Education	15 (23.08)	15 (24.59)	41 (41)			
Bachelor degree in Early Childhood Education*	50 (76.92)	46 (75.41)	59 (59)			
Number of children per childcare centre				28.242**	8	<0.001
<50	43 (66.15)	39 (63.93)	48 (48)			
50-80	22 (33.85)	22 (36.07)	32 (32)			
81-100	-	-	10 (10)			
101-160	-	-	7 (7)			
>160	-	-	3 (3)			
Number of nursery workers per childcare centre				9.902	6	0.129
1	8 (12.31)	7 (11.48)	5 (5)			
2	27 (41.54)	16 (26.23)	33 (33)			
3	13 (20)	17 (27.87)	19 (19)			
Over 4	17 (26.16)	21 (34.43)	43 (43)			
<b>Children's minimum age</b>				99.707**	4	<0.001
<12 months	4 (6.15)	2 (3.28)	-			
13-24 months	59 (90.77)	52 (85.25)	30 (30)			
25-36 months	2 (3.08)	7 (11.48)	70 (70)			
<b>Children's maximum age</b>				24.358*	8	0.002
25-36 months	-	-	6 (6)			
37-48 months	30 (46.5)	31 (50.82)	50 (50)			
49-60 months	33 (50.77)	30 (49.18)	31 (31)			
61-72 months	2 (3.08)	-	10 (10)			
73-84 months	-	-	3 (3)			

\*\* Significance at  $p<0.01$ , \* Significance at  $p<0.05$

Appendix 4.3: Comparison between the Mean Score of Knowledge and Attitudes for Two Pairs at Baseline (the Pre-test) Using the **Independent Student's Sample T-test**

Variables	n	Mean	SD	t	df	p-value
Knowledge scores						
Lampang control	61	16.28	2.92	4.089**	124	<0.001
Lampang intervention	65	14.32	2.44			
Nonthaburi control						
Lampang intervention	100	14.68	2.53	0.897	163	0.371
Lampang intervention	65	14.32	2.44			
Attitudes scores						
Lampang control	61	116.93	8.75	5.904**	124	<0.001
Lampang intervention	65	108.71	6.83			
Nonthaburi control	100	112.70	9.17	3.009*	163	0.003
Lampang intervention	65	108.71	6.83			

\*\* Significance at p<0.01, \*Significance at p<0.05

Appendix 4.4: Comparison of the Differences in Mean Scores of Knowledge and Attitudes between the Lampang Intervention Group and the Nonthaburi Control Group at Baseline and the First Post-test (Paired T-test)

Variables	n	Mean	SD	t	df	p-value
Knowledge scores						
Lampang intervention	65	20.00	2.09	20.591**	64	<0.001
Nonthaburi control	98	15.12	2.78	1.348	97	0.181
Attitudes scores						
Lampang intervention	65	122.45	6.40	12.64**	64	<0.001
Nonthaburi control	98	112.98	10.95	0.246	97	0.806

\*\* Significance at p<0.01, \*Significance at p<0.05

**Appendix 4.5: Comparison of Knowledge and Attitudes Score Variables between Two Groups in the First Post-test; Independent T-test**

Variables	n	Mean	SD	t	df	p-value
Knowledge scores						
Lampang intervention	65	20.00	2.09	12.05*	161	<0.001
Nonthaburi control	98	15.12	2.78			
Attitudes scores						
Lampang intervention	65	122.45	6.40	6.95*	161	<0.001
Nonthaburi control	98	112.98	10.95			

\*\* Significance at  $p<0.01$ , \*Significance at  $p<0.05$

**Appendix 4.6: Comparison of the Differences in Mean Scores of Knowledge and Attitudes in the Three Groups at Baseline and the Second Post-test (Paired T-test)**

Variables	n	Mean	SD	t	df	p-value
Knowledge scores						
Lampang control	61	15.69	3.63	-2.019*	60	0.048
Lampang intervention	65	20.38	1.90	22.581*	64	<0.001
Nonthaburi control	77	14.82	2.95	-0.177	76	0.86
Attitudes scores						
Lampang control	61	114.28	9.19	-2.056*	60	0.044
Lampang intervention	65	123.40	6.39	12.222*	64	<0.001
Nonthaburi control	77	113.86	10.29	0.132	76	0.895

\*Significance at  $p<0.05$

Appendix 4.7: Comparison of the Mean Score of Knowledge and Attitudes for Two Pairs in the Second Post-test Using the **Independent Student's Sample T-test**

Variables	n	Mean	SD	t	df	p-value
Knowledge scores						
Lampang control	61	15.69	3.63	-9.017**	124	<0.001
Lampang intervention	65	20.38	1.90			
Nonthaburi control						
Lampang intervention	77	14.82	2.95	13.541**	140	<0.001
Lampang intervention	65	20.38	1.90			
Attitudes scores						
Lampang control	61	114.28	9.19	-6.434**	124	<0.001
Lampang intervention	65	123.40	6.39			
Nonthaburi control	77	113.86	10.29	6.745**	140	<0.001
Lampang intervention	65	123.40	6.39			

\*\*Significance at p<0.01

Appendix 4.8: Comparison of the Change in Both Knowledge and Attitudes Scores between the Lampang Intervention and the Nonthaburi Control Group (the First Post-test Scores Minus the Pre-test Scores) Using the Independent T-test

Variables	n	Mean	SD	t	df	p-value
Change in knowledge scores						
Nonthaburi control	98	0.46	3.37	11.909	161	<0.001
Lampang intervention	65	5.68	2.22			
Change in attitudes scores						
Nonthaburi control	98	0.36	14.36	7.382	161	<0.001
Lampang intervention	65	13.74	8.76			

\* Significance at p<0.05

**Appendix 4.9: Analysis of Covariance (ANCOVA) of the Change in Knowledge and Attitudes Scores in the First Post-test for Two Groups**

Source of Variation	Type III Sum of Squares	df	Mean Square	F	p-value
<b>Change in knowledge<sup>a</sup></b>					
Age	3.427	1	3.427	.383	.537
Number of years of work experience	9.174	1	9.174	1.024	.313
Number of children per nursery worker	.077	1	.077	.009	.926
Group	681.062	1	681.062	76.020*	.000
Education level	.320	1	.320	.036	.850
<b>Change in attitudes<sup>b</sup></b>					
Age	4.034	1	4.034	.025	.873
Number of years of work experience	9.230	1	9.230	.058	.810
Number of children per nursery worker	.824	1	.824	.005	.943
Group	4754.739	1	4754.739	29.982*	.000
Education level	57.893	1	57.893	.365	.547

a. R Squared = .441 (Adjusted R Squared = .415)

b. R Squared = .230 (Adjusted R Squared = .195)

Appendix 4.10:Comparisons of the Change in Knowledge and Attitudes Scores between the Second Post-test and Pre-test for Two Pairs (Independent T-test)

Variables	n	Mean	SD	t	df	p-value
Knowledge scores						
Lampang control	61	-0.59	2.28	-16.789*	124	<0.001
Lampang intervention	65	6.06	2.16			
Nonthaburi control						
Nonthaburi control	77	-0.078	3.86	11.925*	140	<0.001
Lampang intervention	65	6.06	2.16			
Attitudes scores						
Lampang control	61	-2.656	10.09	-9.845*	124	<0.001
Lampang intervention	65	14.69	9.69			
Nonthaburi control	77	0.195	12.93	7.625*	140	<0.001
Lampang intervention	65	14.69	9.69			

\* Significance at  $p < 0.05$

Appendix 4.11:Analysis of Covariance (ANCOVA) of the Change in Knowledge and Attitudes Scores in the Second Post-test for Three Groups

Source of Variation	Type III		Mean Square	F	p-value
	Sum of Squares	df			
Change in knowledge <sup>a</sup>					
Age	6.283	1	6.283	.721	.397
Number of years of work experience	14.357	1	14.357	1.648	.201
Number of children per nursery worker	.574	1	.574	.066	.798
Group	1262.462	2	631.231	72.462*	.000
Education level	.608	1	.608	.070	.792
Change in attitudes <sup>b</sup>					
Age	127.156	1	127.156	1.019	.314
Number of years of work experience	14.966	1	14.966	.120	.730
Number of children per nursery worker	.277	1	.277	.002	.962
Group	8949.118	2	4474.559	35.841*	.000
Education level	544.972 <sup>b</sup>	1	544.972	4.365*	.038

a. R Squared = .525 (Adjusted R Squared = .503)

b. R Squared = .332 (Adjusted R Squared = .301)

Appendix 4.12:Comparison of the Change in Knowledge and Attitudes Score Variables between the Lampang Intervention Group and the Nonthaburi Control Group in the First and Second Post-test

Variables	n	Mean	SD	t	df	p-value
Change in knowledge scores						
Lampang intervention	65	0.385	1.82	1.706	64	0.093
Nonthaburi control	77	-0.818	3.04	-2.360*	76	0.021
Change in attitudes scores						
Lampang intervention	65	0.954	8.71	0.883	64	0.381
Nonthaburi control	77	0.987	14.11	0.614	76	0.541

\* Significance at p<0.05

Appendix 4.13:Repeated Measures Analysis of Covariance  
(R-ANCOVA) of Knowledge and Attitudes  
Scores in the Second Post-test for Three  
Groups

Source of Variation	Type III Sum of Squares	df	Mean Square	F	p-value
Between Subjects					
Age	103.567	1	103.567	2.131	.147
Experience	.246	1	.246	.005	.943
Children per nursery worker	5.638	1	5.638	.116	.734
Group	2039.277	1	2039.277	41.957	.000
Education	462.316	1	462.316	9.512	.002
Group* Education	1.039	1	1.039	.021	.884
Error	6561.468	135	48.603		
Within Subjects					
time	26.082	1	26.082	0.724	0.396
time* Age	0.140	1	0.140	0.004	0.950
time* Experience	2.132	1	2.132	0.059	0.808
time* Children per nursery worker	55.036	1	55.036	1.528	0.219
time* Group	2690.674	1	2690.674	74.709*	0.000
time* Education	119.037	1	119.037	3.305	0.071
time* Group * education	0.542	1	0.542	0.015	0.903
test* time	19.235	1	19.235	0.544	0.462
test* time* Age	35.004	1	35.004	0.989	0.322
test* time* Experience	63.444	1	63.444	1.793	0.183
test* time* Children per nursery worker	56.996	1	56.996	1.611	0.207
test* time* Group	618.388	1	618.388	17.474*	0.000
test* time* Education	151.747	1	151.747	4.288*	0.040
test* time* Group* Education	1.046	1	1.046	0.030	0.864
test* time Error	4777.511	135	35.389		

\* Significance at p<0.05

Appendix 5.1: Photographs of the Official Training  
(Nonthaburi Control Group) at the Legacy  
Hotel, Nonthaburi Province 7-12 March  
2011



Appendix 5.2: Photographs of the Official Workshop  
(Nonthaburi Control Group) at the  
Legacy Hotel, Nonthaburi Province 7-12  
March 2011



Appendix 5.3: Photographs of the Semi-Structured Interviews with Eight Thai Nursery Workers in the Lampang Intervention Group 13-14, 20-21 July 2011

