DEVELOPMENT OF A PLAYGROUND MODEL APPLYING THAI WISDOM TO ENHANCE MOTOR FITNESS OF PRESCHOOL CHILDREN

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Abstract: The purpose of this study was to develop a playground model with the application of Thai wisdom to enhance motor fitness of preschool children, and to investigate the effects of a playground with the application of Thai wisdom on fitness components.

During phase one a sample group was used to construct the playground model with the application of Thai wisdom to enhance motor fitness of preschool children and an initial sketch of the 'Playground Using Thai Wisdom' was constructed. Nine experts were asked to verify the validity of the content by using the Index of Congruence (IOC). Phase two of the research was the actual construction of the Playground Using Thai Wisdom for the actual use of the playground with the participants. The participants were selected using purposive sampling. The participants came from Wat-Khampang municipal school from the Chonburi province in Thailand and were in Kindergarten 3 (2 classrooms/ 21 children per class). The two groups were divided using simple random sampling and put into an experimental group and a control group. The experimental group had the freedom to play on their own in the Playground using Thai Wisdom, while the control group has the freedom to play in the regular multi-play structures. The experiment was conducted over an eight-week time. Motor fitness of the participants was tested three times over the eight-week period, pre experimentation, after four weeks, and after eight weeks. Data was analyzed using two-way repeated measures comparing the results of the motor fitness test of the two groups and their interaction with the three tests conducted.

During the first phase of developing a playground model using Thai wisdom the researcher found that the playground model could be broken into five major parts. The five parts include: 1) Movement Activity, 2) Designation of Area, 3) The Use of Thai Wisdom, 4) Safety and 5) The Appropriate Use of the Playground. The final model of "The Playground Using Thai Wisdom" consisted of seven parts. Phase two is currently being conducted and the results will be reported at the completion of phase two.

Keywords: Motor Fitness, Playground, Preschool children, Thai wisdom

Introduction

Preschool children have to be involved in daily physical activities for at least sixty minutes a day (NASPE, 2002). The handbook of early childhood education curriculum in Thailand 2003 states that children have to do physical activities and have the freedom period to play in school (Ministry of Education of Thailand, 2003). Early childhood education often focuses on children learning through play. Preschool physical education usually occurs in playgrounds and there are several play types, especially robust play. This is important for the proper physical development of the children, including muscle and bone development (Srisumran, 1994). Outdoor activities help develop children's mental health, physical health, spiritual health, emotional health, and social skills. Outdoor activities also fulfill the basic needs of movement and play of all children. Physical activity helps develop the fundamentals of movement to enhance strength, endurance, balance, agility, speed, and coordination, which increases children's motor fitness (Samahito, 1989).

Designing the appropriate playground for children can increase the physical activity level by giving them the chance to be involved in Moderate-Vigorous Physical Activity that benefits the children's physical health. (Zask and others, 2001) In Thailand, less than 50% of preschools have playgrounds and most of the playgrounds are not up to standard (Limsupreeyarat, 2006). This shows the children's lack of opportunities to develop themselves using physical activity that has benefits for their physical health.

Playgrounds in Thailand have been constructed after the models on foreign countries: but playgrounds should be adjusted to connect the playground with natural environment and Thai culture, which is the one form purposed by the Education Policy of 1999, which states that the purpose of childhood education programs is to integrate knowledge: The integration of knowledge allows children to take part in direct experiences in order to transfer and realize knowledge from their surroundings (Office of the Ministry of Education, 1999).

The researcher was interested in developing a playground merged with other knowledge, which will be a benefit to children. The development of a playground using Thai wisdom, focusing on human interaction with the natural environment, will benefit not only children; but also the cost of constructing a playground by using the natural landscape, as a part of the playground will be of general benefit. The construction of each individual playground's equipment will use materials easily found in each province. No matter how the playground is altered in

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each of the provinces the main purpose of the playground must still remain. The purpose includes the freedom for children to play, to have the opportunity to connect with other children, practice sharing and creating trust between children, to have the opportunity for physical movement, and to develop motor fitness.

Objectives

1. The purpose of this study was to develop a playground model applying Thai wisdom to enhance motor fitness of preschool children.
2. The purpose of this study was to investigate the effects of the playground applying Thai wisdom on motor fitness components.

Research Methodology

This research used a research and development method. This research also used a mixed method methodology, both qualitative and quantitative methods, split into the two phases.

Phase 1: Phase one was to review the theories, documents, and prior research and ideas dealing with the topic at hand as the layout for the development of a playground using Thai wisdom. Using the information, a questionnaire was constructed for experts to validate the congruency of the content and objectives in each of the categories. Experts asked to verify the content were specialists in three different areas: 1) Fundamentals of movement and motor fitness, 2) Preschool childhood development and play related behavior, 3) Playground design and safety experts. Each area had three experts with a total of 9 experts asked to validate the content using the index of congruence (IOC). The results from the experts were used to improve the playground model using Thai wisdom to enhance motor fitness of preschool children and improve the initial design into the master design.

Phase 2: Phase two of the research was the actual construction of the Playground Using Thai Wisdom (master plan) for the actual use of the playground with the participants. This research used the Quasi-experimental design. Purposive sampling was used to determine the participants. The participants came from Wat-Khampang municipal school from the Chonburi province in Thailand and were in Kindergarten 3 (2 classrooms/21 children per class). The two groups were divided using simple random sampling and put into an experimental group and a control group. The experimental group has the freedom to play on their own, while being monitored by a teacher, in the Playground using Thai Wisdom, while the control group has the freedom to play, while being monitored by a teacher, in the regular multi-play structures.

The experiment was conducted over an eight week time period, 5 days a week, 30 minutes a day between 10:30 a.m. to 11:00 a.m. The time used for this research replaced the normal outdoor activity time of the students in their daily school schedule. Motor fitness of the participants was tested three times over the eight-week period, pre experimentation, after four weeks, and after eight weeks. To ensure the participants did not use the other group's playground, the researcher asked the school to conduct all other activities in the classrooms.

Data Collection

The data was collected at Wat-Khampang municipal school from the Chonburi province in Thailand. The playground model applying Thai wisdom was actually constructed on the school grounds and the multi-play structure playground already constructed in the school was used during this research. The construction of the playground and safety evaluations was conducted between April 2010 and May 2010. The researcher and research assistants carried out the motor fitness tests of the control and experimental groups for the pretest, after four weeks and after eight weeks period. The data was collected between May 2010 and July 2010.

Research Instrument

1. The playground using Thai wisdom (Master design)
2. A multi-play structure
3. Experimental program
4. Motor fitness test (7 items)

a. Sit and reach
b. Sit-ups
c. 20 meter dash
d. Standing board jump
e. Three things shuttle run
f. Throw a ball for a distance
g. Balance on one leg on a wooden block

Items a-f were taken from the Kasetsart motor fitness test (Samahito, 1991), and item g was taken from The Office of Elementary School (1992) refer to Srisumran, (1994).

All 4 instruments were approved by the International Conference on Harmonization-Good Clinical practice. (ICH-GCP) on April 5th, 2010 until April 4th, 2011. (E-mail eccu@chula.ac.th)

Data Analysis

In phase 1 an evaluation using the index of item-objective congruence analyzed using percentage and frequency to find the IOC results. If IOC is higher than 0.5 then the content and objective are related (KaemKate, 2006) and appropriate to use for actual data collection.

In phase 2, two-way repeated measures comparing the results of the motor fitness test of the two groups and their interaction with the three tests was conducted. General linear models (SPSS 13.0, SPSS Inc., Chicago) test group by time effect. Significance levels of $\propto = 0.05$ were used throughout the analysis and Sphericity Assumed was used when the assumption of Sphericity was not significant. Greenhouse-Geisser was used when the assumption of Sphericity was significant.

Results

The quality of the research instrument found that the content of a playground model applying Thai wisdom to enhance motor fitness of preschool children has five parts. The five parts include: 1) Movement Activity (includes 7 subparts), 2) Designation of Area (includes 5 subparts), 3) The Use of Thai Wisdom (includes 3 subparts), 4) Safety (9 subparts) and 5) The Appropriate Use of the Playground (includes 3 subparts). The total IOC score of all the 5 parts was 0.81. The Playground Using Thai Wisdom (Master Model) consisted of seven items: playground equipment/activity area and the program designed for this research received an IOC score of 0.78. The cost of constructing The Playground Using Thai Wisdom (Master Model) was 18% less than the cost of constructing the multi-play structure that was already in Wat-Khampang municipal school.

In The Playground Using Thai Wisdom (Master Model) as shown on Figure 1 is consisted of seven items follow:

1. Warm up area
2. 4 Balance beam
3. Agility area
4. Springing tabletop
5. Slope and climbing net
6. Monkey bar
7. Hop Scotch

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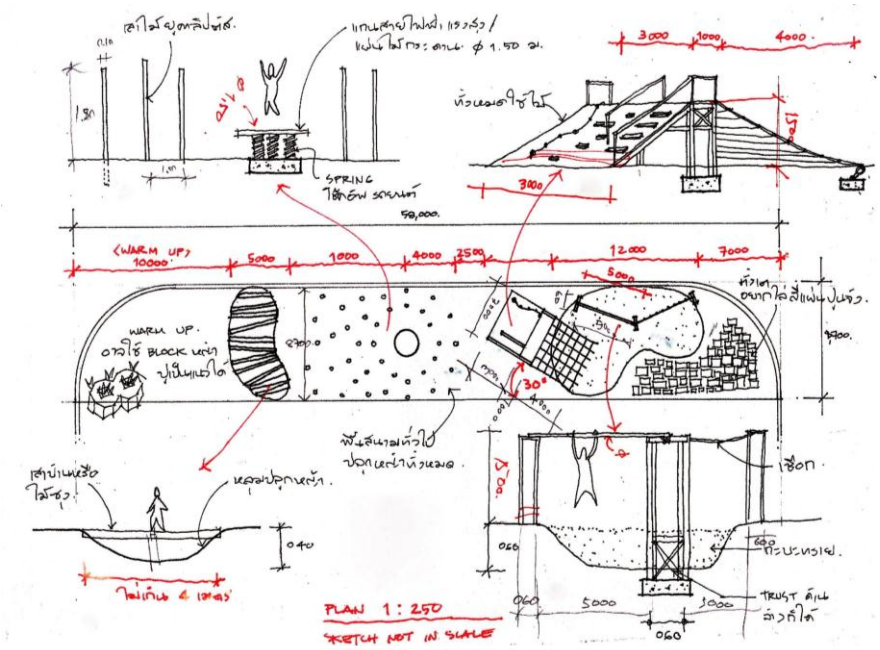

Figure 1: The Playground Using Thai Wisdom (Master Model) of Wat-Khampang Municipal School from the Chonburi Province in Thailand

Figure 2: Before Development the Playground Using Thai Wisdom (Master Model) of Wat-Khampang Municipal School from the Chonburi Province in Thailand

Figure 3: After Development The Playground Using Thai Wisdom (Master Model) of Wat-Khampang Municipal School from the Chonburi Province in Thailand