Original Research

Stimulate Smooth Motoric Development in Preschool Children By Using Educational Game Tools

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Abstract

Introduction: The development of smooth motoric, language, and interact to adapted in social are the growth of preschool aged children involves aggressive. Children’s movements that use a small muscles or only certain parts of the body smooth motoric is process in growth. The growth of this aspect can be stimulated, which kind of the use of Educational Game Tools (EGT). The purpose of this research was to identify the usefulness of using educational games equipment to stimulate smooth motoric growth in preschool children at Srikandi Kindergarten, Lhokseumawe.

Methods: The method used in this research was Quasi-experimental Research. The technique of this study took the illustration by using the random sampling technique, with a total of 31 respondents who were given stimulation at that time. The data from this study were processed by using a dependent T-test of the variables of educational games and smooth motoric development in preschool children.

Results: The results of this study showed that the use of educational games is effective for stimulating smooth motoric development in preschool children with a p-value = 0.000 < (0.05).

Conclusion: The study can be concluded that children aged 4-5 years have questionable smooth motor development and irregularities before being given Educational Game Tools (EGT) stimulation. It is suggested to parents of respondents to use educational game tools to stimulate motoric development in children according to their developmental age.

Keywords: educational game tools, smooth motoric development, preschool children

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INTRODUCTION

Early childhood or preschool age is the growth phase of 2-6 years, when children begin to have an understanding of themselves as a woman or man, can control themselves and understand some things that are thought to be at risk. Universally, aspects of growth in preschoolers include physical, cognitive, emotional, and language growth [1]. The condition of the child in the period of growth and development begin from the age of infancy 0-1 year, toddler 1-3 years, preschool 3-6 years, school age 6-12 years, until young people 12-18 years [2]. Early childhood is a very meaningful period for the development of physical, motor, cognitive, moral, social-emotional aspects [3].

In order to stimulate these aspects to grow optimally is through early childhood learning. Children's pages are official early childhood learning, learning is very meaningful in early childhood for a period of character growth, mental behavior, and intellectuals built at an early age [4]. World Health Organization (WHO) states that 5 to 25% preschool children in the world got minor brain dysfunction, including impaired smooth motor development [5]. The incidence of developmental disorders in children aged 3 to 17 years in the United States has increased from 2014 of 5.76% and in 2016 of 6.9% [6].

United Nations Educational, Scientific and Cultural Organization (UNESCO) provide information if the educational participation rate of children of age continue to be good for children's fine motor movements to make children creative, such as cutting paper, uniting 2 pieces of paper, but not all children have the maturity to master abilities at the same stage. In performing fine motor movements, children also need early support [7]. Playing is a fun and exciting activity for children. Playing is a necessity, so it is suitable for people to say that playing is a child's world. Playing provides an opportunity for children to adapt to others and the environment and impacts on their motor development, thinking ability, and the ability to solve problems [8].

Goal-oriented play is active play that requires working the body muscles, which stimulates muscle functions. Sufficient muscle activity makes the blood flow to the brain smoothly, increasing blood circulation. Motor movement is only possible when the muscular system attached to the bones and nerves innervates them. Enjoyable playing makes children happy and willing to repeat the same activity, so they do not feel that they are training the muscles to work as stated by St. John [9]. Motor exercises and activities will benefit all students with delays, but the larger the delay, the more important the training and the bigger the impact on academics. Reduced physical activity in children can lead to reduced physical abilities, resulting in a decrease in motor quality [10].

In Indonesia the lowest in the world 20% of 20 million children aged 0-8 years can enjoy ECCE. The international world defines ECCE as education for ages 0-8. On the other hand, Indonesia applies to children aged 0-6 years. Data obtained by researchers from the Ministry of Health’s Program Target Data in 2010 showed that the number of preschool children in Indonesia was 8,269,856 while for
Aceh Province it was 171,314 inhabitants. In Lhokseumawe there were 708 students from 60 Kindergartens, PAUD and Raudhatul Athfal, and the data obtained by researchers at the time of initial data collection at Srikandi Kindergarten Lhokseumawe was 152 students consisting of 78 boys and 74 girls divided into kindergarten A and kindergarten B. To improve the ability of children at preschool age, learning facilities are needed. One of the learning facilities that is a program of the Ministry of Education and Culture that is being carried out is Early Childhood Education [1].

Motor development means that the control of physical movements through coordinated nerve and muscle centers. The control gets from the activities of the period that existed of birth. Before this development occurs the child will remain helpless [3]. Educational Game Tools (EGT) is a familiar term that is often heard, but less people understands that EGT is not only a ready-made toy but can also be made independently. EGT can provide stimulation to aspects of child development. Guidelines for selecting, using and making EGT independently are a form of support for developing five aspects of child development, namely the value of providing an explanation of the selection, manufacture and use of EGT by educators from tools and materials in the surrounding environment, for example household appliances, used materials, and natural materials [11].

Educational Game Tools is a game tool designed and used for early childhood children able to play and learn, so that aspects of child development occur. As for what distinguishes APE from other game tools, it lies in the planning element of its manufacture which considers the characteristics of children and relates them to various aspects of child development [12]. The basic principle of the sense of educational games is that it can raise & spread the child's psychomotor, social-emotional abilities (e.g. sharpening feelings, building morality, spirituality, raising self-religion), and ingenuity abilities (including the development of children's skills & creativity). Examples of educational game senses for preschoolers include puzzles, drawing books, children's magazines, papers for teach [4].

METHODS

The design of this study uses a Quasi-experimental design with the design used is the One-Group Pretest-Posttest Design without any control group but the first observation (pre-test) has been carried out which allows researchers to test changes that have occurred after the experiment (post-test) [13].

The population in this study was all Srikandi Kindergarten Lhokseumawe students, totaling a population of 152 people. The sample in this study was 31 people from the total number of Srikandi Kindergarten Lhokseumawe students using random sampling techniques [14].

The general characteristics of the study subjects reducing the bias of these results were: inclusion criteria are parents of students who want their children to be used as research samples and students age 4-6 years. Exclusion criteria are parents of
students who do not want their children to be used as research samples, the child is sick.

The analysis of information in this study is using univariate analysis and bivariate analysis. Univariate analysis is to describe the characteristics of each variable studied, on the contrary, bivariate analysis aims to recognize the presence or absence of the influence of independent variables on dependent variables.

RESULTS

Based on Table 1, it can be seen that 21 respondents of the 31 (67.7%) were aged at 6 years old, and aged 5 about 10 respondents (32.3). Moreover, sex characteristics can be seen that male type was 15 respondents (48.4), and female type was 16 respondents (51.6). Based on Table 2, it can be seen that the 27 respondents who have not been given stimulation there is no fine motor development. Based on Table 3, it can be seen that the 31 respondents who have been given stimulation there is fine motor development.

Based on Table 4. It can be seen that the average fine motor development before stimulation is given is 1.562 with a standard deviation of .878 while in fine motor development after stimulation, an average value of 1.372 with a standard deviation of 0 is obtained .770.

It can be seen that the mean value of the difference between the measurement of fine motor development before stimulation and the measurement of fine motor development after stimulation is 1.562 with a standard deviation of 1.372. The results of the statistical test obtained a p value of .000 showing a < number of 0.05 so that the null hypothesis (Ho) was rejected and the work hypothesis (Ha) was accepted, indicating that there was a significant difference between fine motor development before stimulation and fine motor development after stimulation in preschoolers at Srikandi Kindergarten Lhokseumawe.

Table 1
Characteristics Distribution of Respondents of Fine Motor Development in Srikandi Kindergarten Lhokseumawe (n=31)

<table>
<thead>
<tr>
<th>Characteristics Respondent</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>32,3</td>
</tr>
<tr>
<td>6</td>
<td>21</td>
<td>67,7</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Man</td>
<td>15</td>
<td>48,4</td>
</tr>
<tr>
<td>Woman</td>
<td>16</td>
<td>51,6</td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
<td>100</td>
</tr>
</tbody>
</table>
**Table 2**  
Distribution of Fine Motor Development Before Stimulation of Educational Game Tools in Srikandi Kindergarten Lhokseumawe (n=31)

<table>
<thead>
<tr>
<th>Fine Motor Development</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>4</td>
<td>12,9</td>
</tr>
<tr>
<td>Not</td>
<td>27</td>
<td>87,1</td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
<td>100</td>
</tr>
</tbody>
</table>

**Table 3**  
Distribution of Fine Motor Development After Stimulation of Educational Game Tools in Srikandi Kindergarten Lhokseumawe (n=31)

<table>
<thead>
<tr>
<th>Smooth Motor Development</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>31</td>
<td>100</td>
</tr>
<tr>
<td>Not</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
<td>100</td>
</tr>
</tbody>
</table>

**Table 4**  
Effectiveness of the Use of Educational Game Tools Against Stimulation of Fine Motor Development in Preschool Children in Srikandi Kindergarten Lhokseumawe

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>P-value</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fine Motor Development Pre Stimulation</td>
<td>1.562</td>
<td>.878</td>
<td>.155</td>
<td>.000</td>
<td>31</td>
</tr>
<tr>
<td>Fine Motor Development Post Stimulation</td>
<td>1.372</td>
<td>.770</td>
<td>.141</td>
<td></td>
<td>31</td>
</tr>
</tbody>
</table>

**DISCUSSION**  
Based on the results of the analysis test with the *paired T-test*, it shows that the correlation level of fine motor development is 0.518 with a *p(sig) of 0.000*, this shows that the correlation between fine motor development before and after stimulation is strong and significant. Based on the foregoing, it is known that the calculated t-value on fine motor development is 1.562 with a *p-value of .000*, since the *p-value < 0.05* it can be said that *H_a is accepted*, meaning that by providing the action of using educational game tools in a preschooler can improve his fine motor development according to table 4. The average fine motor development before
stimulation was .878 while after being given stimulation there was an average increase in fine motor development of 1.372 with a difference of .770.

The result of the study is in line with the result of research conducted by Annif Munjidah that the pre-test results showed that 8 people (24.3%) experienced smooth motor development hesitant. While the post-test showed that most of the 32 people (97%) had appropriate smooth motor development. The result of the analysis test obtained the value of $\rho = 0.000 < \alpha = 0.05$ then H0 rejected means that there was an effect of stimulation of Educational Game Tools (EGT) on motor development 4-5 year old fine at RA Baitul Karim Surabaya [15].

Each child is a unique person because of the innate aspects and different areas, until the achievement of children’s skills is also different. The skill of fine motor growth of 4-year-olds is to be able to build a tower as high as 11 squares, draw something meaningful for the child and can be recognized by others, use finger movements throughout the finger game, trace photos of boxes, and wrote some letters. At the age of 5, children can write their first name, build a tower as high as 12 squares, color it with lines, hold a pencil correctly between the mother of the finger and 2 fingers, draw people with hair and nose, trace rectangles and triangles, and cut simple shapes.

According to researchers, each child should be given stimulation according to their developmental age because then the child will be able to pass his development according to the age group, if the child is unable to pass it, there will be suspicion in the parents whether the child has developmental problems so that it can be prevented as early as possible.

Researchers concluded that the use of Educational Game Tools is effective against stimulation of fine motor development in preschoolers with the results of research after stimulation of fine motor development better than before stimulation. Factor that affected children when playing is gender. Usually girls prefer to play games that don’t spend more energy, for example; playing dolls, house and generally they are lazy to do games like climbing, running or other physical activity because it consumes more energy, p is different from men [16].

**CONCLUSION**

Based on the research results, it can be concluded that children aged 4-5 years have questionable smooth motor development and irregularities before being given Educational Game Tools (EGT) stimulation. Fine motor development of respondents before stimulation has not been developed by 27 respondents (87.1%) while there has been development of 4 respondent (12.9%). Fine motor development of respondents after stimulation has been developed by 31 respondents (100%). The use of educational games is effective against the stimulation of fine motor development in preschoolers with a p(sig) value = .000 with an average before the action is 1.562 and the average after the action is 1.372. Finally, children who are given stimulation of Educational Game Tools (EGT) can improve smooth motor development, especially children at 4-6 years old.
REFERENCES


