

Busy Box Educational Model Based on Gamification on Fine Motor in Children Aged 3-4 Years

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Abstract:- Background: Problems that are often faced by early childhood when they start entering early school environment is the lack of independence of children. This is due to a lack provision of stimulation and ignorance in providing stimulation of development. Study while playing for early childhood is very important, by learning while playing, the learning process will be effective and more quickly captured especially for fine motor development. Goal: Earning gamification-based *Busy Box* educational model for fine motor skills of children aged 3-4 years. Methods: Research and Development (R&D) tested the model using a *quasy experimental one group pre-test post test design*. The number of samples is 36 respondents, 18 intervention respondents and 18 control respondents. The intervention group was given *Busy Box* and the control group was given a puzzle. Expert test using *interclass correlation coefficient* . The analysis used to assess variables is *Wilcoxon*. For assessed differences in the two groups using *Mann Whitney*. Results: *The Busy Box* educational model effective gamification-based for training fine motor skills. Shown with a value of sig.000 (<0.05). Conclusion: The gamification-based *Busy Box* educational model is effective for training young children's fine motor skills 3-4 years

Keywords:- *Busy box, Fine Motor.*

I. INTRODUCTION

The problem that is often faced by early childhood when starting to enter the early school environment is the lack of child independence. This is due to a lack of stimulation and ignorance in providing developmental stimulation. This can be seen when children are not able to do simple things in daily activities such as tying shoelaces, buttoning clothes, wearing their own clothes which children should be able to do on their own without help from others according to their age.

Efforts to stimulate or provide stimulation to children is to increase fine motor skills so that children can carry out their own activities. Fine motor is a movement that involves small muscles and nerves which later gives rise to movements such as writing, pasting, sewing and crocheting, while it is a child's way of thinking to understand something or solve a problem.

In children who experience fine motoric disorders in Singapore it reaches 25%, while in Malaysia it reaches 35%, Thailand 33%, and in the Philippines it is quite low, namely 15%, children experience developmental delays caused by a lack of stimulus which has an impact on fine motoric disorders.

In Indonesia, 14.7% of children experience fine motor development disorders caused by several factors, namely lack of stimulus, nutrition, heredity and parenting. This has an impact on developmental disorders and preschoolers will experience difficulties in the learning process.

One of the factors that influence fine motor stimulation is the use of learning media. This is because learning media carry messages that can be used for learning purposes and convey learning material further, the media contains instructional material so that it stimulates students to learn. Learning media can be in the form of printed materials, instructors and all of these learning media have the benefit of facilitating the delivery of material by teachers and health workers.

Learning while playing for early childhood is very important, by learning while playing, the learning process will be effective and more easily captured when they are playing and one of the benefits of playing is good for development.

Media busy box is an educational media for children. The definition of busy box is derived from English where busy means busy and box means box, which taken as a whole means busy box. The busy box media itself has various activities to support children's fine motor skills such as cutting, sticking, crocheting and writing shapes .

Busy Box is a box made of wood, inside which contains games that contain stimulating activities, subject matter but packaged by being played by children independently. This program focuses on introducing daily activities to children with play activities that keep children moving and looking busy.

This busy box is expected to be a model of health education education for fine motor skills in children aged 3-4 years and measuring the growth and development of children is the authority of midwives¹⁵. This research also uses a case approach, through field studies¹⁶. so that no party feels

disadvantaged as a promotive and preventive effort so that it can help improve fine motor skills in children aged 3-4 years.

II. METHODOLOGY

This study uses the Research and Development (R&D) method. With Quasy Experiment pre-post test with control group design 46. This study aims to develop Busy Box media as an educational medium in improving fine motor skills in children 3-4 years.

The sample in this study was divided into 3 samples. The first sample at the information gathering stage was 5 people, at the expert validation stage were 3 people and at the model testing stage there were 36 children, which were divided into 18 children in the intervention group and 18 children in the control group.

This research was conducted in February -March 2023 at the Permata UNDIP PAUD Semarang city. This research was conducted for 7 days. The dependent or dependent variable is the fine motor skills of children aged 3-4 years. Pretest or day 1 and posttest measurements are taken on day 7.

Instruments in this study included observation sheets and fine motor assessment questionnaire sheets to assess the pretest and posttest.

This research has been registered with the Health Research Ethics Commission of the Health Polytechnic of the Ministry of Health Semarang with an ethical clearance number of No. 0195/EA/KEPK/2023.

III. RESULT

The results consisted of five stages including information collection, model design, expert validation tests and revisions, trials and model results.

A. Information gathering

Collecting information from various journals and conducted interviews with 5 informants and the results obtained were Suitable learning media given to children aged 3-4 years are media that can be used as an intermediary in stimulating all aspects of development in children and can be used as learning media repeatedly with different themes and sub-themes so that it is interesting, meaning media with different colors. diverse colors and clear material can lead to creativity so that when played it can add fun to children, generate imagination and imagination and can be used for experimentation and exploration and can overcome differences, namely if children aged 3-4 years are not allowed to be brought to direct objects what is learned, then the object is brought to children aged 3-4 years.

B. Design

Dale's Cone Experience Modification Design By E. Dale And Behavioral Theory Notoadmojo.

C. Expert Validation

After expert validation, the validation results obtained from 3 expert validators, Expert validation uses intraclass correlation coefficients (ICC). and the average result of the agreement between experts is 0.804, while for one expert the consistency is 0.578 If the results of the ICC value are classified as reliability proposed by (Fleiss, 1975), then it can be concluded that the agreement between experts is strong, and each assessor has pretty good consistency.

D. Model Test Results

The product trial activity in the form of a Busy Box was carried out after the revision of the card design was deemed feasible by the validator to continue for research.

Table 1 Score Descriptive Statistics Fine Motor Pretest-Posttest

Group	N	Pre-Test	Post-Test	Difference	Pre-Test		Post-Test	
		Mean±SD	Mean±SD		Min	Max	Min	Max
Intervention	18	6,94±1,392	14,17±1,339	7,23	5	10	10	15
Control	18	7,72±1,708	10,06±1,10	2,34	5	11	8	12

Based on the table above, it can be seen that the children's motor pretest score for each group has a different average, namely in the pretest a score of 7.00 was obtained for the intervention group with a standard deviation of 0.840, after the intervention the score increased to 13.78 with the standard deviation is 0.808 and the difference value is 6.78.

In the control group, the children's pretest score was 6.33 with a standard deviation of 0.970 and in the posttest, a score of 11.39 was obtained with a standard deviation of 1.092 and the difference was 5.96. This shows that the average increase in the intervention group that was given a busy box had a greater increase compared to the control group that was given a puzzle.

Table 2 Fine motor normality test table

Group	Statistic	df	Sig.
Intervention	0.812	36	0.000
Control	0.748	36	0.041

Based on the table above, the normality test results for fine motor skills were obtained in the intervention group, which was 0.000 (<0.05) and in the control group, the value was 0.041 (<0.05). This shows that the students' fine motor skills in both the intervention and control groups are not normally distributed, so it is followed by a non-parametric test.

To find out whether the use of busy boxes and puzzles has different effectiveness on children's fine motor skills, it can be seen in the following table:

Table 3 Fine Motor Mann Whitney Test Results

Group	N	Mean rank	Mann Whitney	Sig. (2 tailed)
Control	18	10,06	10,000	0,000
Intervention	18	26,94		

Based on the table above it can be seen that from the Mann Whitney test Sig. of 0.000 <0.05, which means that giving a busy box has a significant effect on improving the fine motor skills of children aged 3 to 4 years.

IV. PRODUCT RESULT



Fig.1 Busy Box

The product in the research was a Busy Box, Busy Box is also designed to build bonding and collaboration between parents, teachers, health workers and children who can assist them in carrying out activities on the Busy Box. The Busy Box concept is learning daily activities in a fun way and adapted to the learning characteristics of children's ages. One of the learning model programs that will be offered in this Busy box is learning by theme, for example, wearing shoelaces and buttoning clothes or it can also be in the form of other themes. Fun learning is important because if children have a positive experience in learning, curiosity will arise and they tend to immediately carry out activities on their own or independently in carrying out activities without help from other people and the Busy Box Program has all of these criteria.

V. DISCUSSION

The learning process that is suitable for children aged 3-4 years is education that is fun and does not make children get bored quickly because children like to learn in various ways. one of them is by playing game tools, so that children find new knowledge and experiences. which can arouse curiosity and motivate children to think critically and creatively, it is necessary to have interesting learning media.

Suitable learning media given to children aged 3-4 years are media that can be used as an intermediary in stimulating all aspects of development in children and can be used as learning media repeatedly with different themes and sub-themes so that it is interesting, meaning media with different colors. diverse colors and clear material can lead to creativity

so that when played it can add fun to children, generate imagination and imagination and can be used for experimentation and exploration and can overcome differences, that is, if a child aged 3-4 years is not possible to be brought to a direct object what is learned, then the object is brought to children aged 3-4 years.

The design of the model is the result of translating the analysis into a package and creating a system to increase understanding in presenting the material to be conveyed to the target.

The results of expert validation mean that the agreement between experts is 0.804, whereas for one expert the consistency is 0.578 If the results of the ICC value are classified as reliability as stated by (Fleiss, 1975), it can be concluded that the agreement between experts is strong, and each assessor has a fairly good consistency.

➤ Fine motor

The pretest assessment was given to determine the children's initial abilities in each research group (both intervention and control). In this study, the pretest value was assessed using a scale of 1-3 with 5 question aspects. It was found that the intervention class before being given treatment had an average score of 6.94 with a standard deviation of 1.392. While the control class has a slightly larger average, namely 7.72 with a standard deviation of 1.708.

Posttest Assessment After being given treatment in the form of giving busy boxes and puzzles, each child's ability was reassessed using the same indicators. As for the results of the post-test scores of each group after each treatment, the post-test scores between the control and intervention groups experienced an average increase. The intervention group that was given a busy box had a larger average than the control group that was given a puzzle, which was 14.17 with a standard deviation of 1.339. While the control group has an average of 10.06 with a standard deviation of 1.110.

From the Mann Whitney test, Sig. of 0.000 (<0.05, which means that giving a busy box has a significant effect on improving the fine motor skills of children aged 3 to 4 years.

This shows that Busy Box games are more effective than puzzle games to improve the fine motor skills of children aged 3-4 years. The Busy Box educational model is presented in an attractive form starting from the shape, color and game activities so that children become more active when playing it Activities in the busy box train the muscles of the child's fingers to move, this can improve the fine motor skills of children aged 3-4 years.

This is supported by the research by Tunggul (2021) that good educational game tools will be more interesting for children than games that are not designed properly, because early childhood usually likes game tools with simple and uncomplicated and colorful examples bright.

Based on Junita's research (2022) the use of educational games can improve hand-eye coordination when children match pictures, improve skills, train accuracy because children use and move their fingers and wrists when playing games.

VI. CONCLUSION

The Busy Box educational model based on gamification is effective and its application is effective for fine motor skills of children aged 3-4 years. This is proven as follows:

- The gamification-based Busy box educational model is effective as an educational model to train fine motor skills for children aged 3-4 years.
- The gamification-based busy box educational model is effective as a guide in efforts to train fine motor movements in children aged 3-4 years.
- The gamification-based busy box educational model is effective for training fine motor movements in children aged 3-4 years.

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