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The Influence of 3D Animation Media Implementation on Balanced Nutritious Food to Early Childhood Education Tutors' Knowledge

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Abstract

This research is aimed at analyzing an effect of 3D animation media application about balanced nutritious food to Early Childhood Education Tutors' knowledge. This research was conducted at Jatibening Early Childhood Education in West Jakarta. A research design used was Quasi-Experimental Design. Based on the result, it revealed that the average pre-test score of respondents' knowledge about balanced nutritious food is 48.78 which is in less category and average post-test score is 80.78 which is good category. Paired Sample Test result obtained p-value = 0.004 <α (0.05) hence, there is a significant difference on the average score of knowledge about balanced nutritious after giving intervention in the form of 3D animation media. The result of T-test of one sample obtained 6,613 for t-count that converted into 1.71714. It means that there is an influence usage of 3D animation media about balanced nutritious food to Early Childhood Education Tutors' knowledge. The increase value is 0.625 in range 0.7> (N-gain) ≥ 0.3. Thus, the improvement of Early Childhood Education Tutors' knowledge by applying 3D animation media about balanced nutritious food is in the medium category.

Keywords: Application; 3D Animation Media; Nutritious Balanced Food; Tutors' Knowledge; Early Childhood Education.

1. Introduction

Early Childhood Education is important and cannot be ignored for the success of further education. Coaching is done to help the growth and development of physical and spiritual so that children have readiness in entering the school further. Provision of nutritious food is very important for early childhood.

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Because to know how far the development of children in consuming foods that are adjusted to the age of the child. Without any nutritious food that will disturb the growth of both physical and mental children. As educators and parents, they must know how to provide healthy nutrition to children at every stage of child development. The role of Early Childhood Education Tutors in introducing nutritious food for early childhood is very important in order to recognize a variety of nutritious foods, so children are not susceptible to disease. Most parents only give a pocket of money to their child without knowing the snacks they bought are nutritious or not because children only consume it. So, it becomes the obligation of Early Childhood Education Tutors in providing learning about the introduction of balanced nutritious food to children and parents. In addition, Early Childhood Education's Tutor is a central figure in the world of education, especially when intertwining the process of teaching and learning interaction. For example, a learning about the introduction of balanced nutritious food to young children. Early Childhood Education Tutors must have professional competence particularly in introducing balanced nutritious food for children. A task of Early Childhood Education Tutors is to introduce a variety of nutritious foods to be consumed by children, as well as the benefits of food for the body that has balanced nutrition for the development and growth of children.

2. Material and Methods

Early Childhood Education Tutor is an instrumental in helping the development of learners to realize the goal of healthy living optimally. It also shows that everyone needs someone else in their development, as well as learners when parents enroll their children in school at that time they put their hopes to teacher. So, children can develop optimally. Early childhood will not develop optimally without the help of adults that is tutors and parents. In this case, it is associated with the provision of nutritious food to young children as to be a healthy child physically and spiritually. So the role of tutor is very influential on the children later. Based on the results of preliminary observation at Cengkareng Early Childhood Education in West Jakarta, it still has some tutors who are less familiar with balanced nutritious food. This is allegedly due to lack of information and communication regarding the provision of food and measures in providing nutritional intake through the media that have existed in the present day such as television media, magazines, and newspapers. In addition, lesson material about nutrition is still lack. Tutors as educators in the teaching-learning process have an influence on their students who are sometimes more obedient than parents. So, it is necessary to fulfill a nutritional needs to be healthy and intelligent.

The ways for Early Childhood Education Tutors to do an introduction to nutritious food are (1) to show nutritious foods; (2) how to choose nutritious food; and (3) to inform nutritional benefits of life. Those are expected to tutors to realize and do according to the stage of early childhood development. So, the cognitive competence of Early Childhood Education Tutors should be improved first before teaching children about balanced nutritious food. One of the teachings that need to be given in early childhood 5-6 years is balanced nutritious food. Media is used 3D video animation media. 3D video animation media is one media that cannot be separated from the nature of the game so it can be used in doing nutrition education in children aged 5-6 years. Based on research of Ariyani in [8] the use of effective animation media is improving English learning achievement. Similarly, according to Pariyono in [8] said that the learning with animation media pictorial has a positive effect on the mastery of Indonesian vocabulary in children of illiteracy at SLB Dharma Bhakti in

Semarang 2006/2007.

The use of song media has been done in research of [9] that music/songs have a positive influence on the development of emotional intelligence of kindergarten children. Children's song media and animation are expected to be an effective medium in delivering balanced and healthy nutrition messages for Early Childhood Tutors and groups of children aged 5-6 years in general. 3D animation media is expected to become a new learning media that can reduce the atmosphere of static and scary, so as to create an interesting learning process and fun. Turor will be more eager to provide learning because the abstract material that has been abstract can now be visualized so that more easily understood with 3D video animation learning media, the whole way of learning can be accommodated so that almost 100% human learning retention. The Early Childhood Education Tutor as a profession, demanding to tutor early childhood to develop professionalism self according to the development of science and technology. Educating, teaching, and training students are the task of Early Childhood tutors as a profession.

This research is aimed at analyzing the effect of 3D animation media application about balanced nutritious food to Early Childhood Education Tutors' Knowledge. It was conducted at Jatibening Early Childhood Education in West Jakarta. It consisted of Al Azhar 24 Kindergarten in Jatikramat and Al-Azhar Syifabudi Kindergarten in Jatibening. It conducted from March to November 2017. Subjects were 20 Early Childhood Education Tutors selected as samples. A research design used was Quasi-Experimental Design that is kind of experiment which is not actually because not yet fulfill requirement such as scientifically experimental way to follow certain rules [2]. This research used test to examine validity of a learning medium. A research media used was 3D animation media about balanced nutritious food. This research design used one pre-posttest design approach. In this research, the researcher wanted to know whether there is influence of 3D animation media application about balanced nutritious food to Early Childhood Tutors' knowledge or not. The data were quantitative in the form of numbers both Pre-test and Post-test from the use of 3D animation media about balanced nutritious food on early childhood tutor's knowledge. The validity of the learning result instrument was done by construct validity to 1 expert lecturer and content validity to 10 tutors which is not a research sample. Test of construct validity was done to lecturer of nutrition expert and Early Childhood Education that was Nur Riska, S.Pd, M.Si. She assessed the feasibility of the instrument to be used as research data in terms of material, discussion, question weight according to level bloom, and instrument validity. Furthermore, the validation of the items on the 10 Early Childhood Education Tutors. The price of r_{count} obtained compared with r_{table} with 5% significance level. If the price is $r_{count} > r_{table}$ then the question item tested has valid criteria. Based on the calculation of biserial, validity use the product moment formula of 27 questions made. A total of 4 invalid questions. To test the reliability using the Kuder-Richardson 20 formula, the reliability calculation result r of 0.995. If converted by r table of 0.623, then r arithmetic> r table so that the instrument is said to be reliable. The instrument has a very high reliability because the value of r 0.995 is in the range of $0.80 < r11 \leq 1.00$ the reliability is very high. This normality test uses One-sample Kolmogorov-Smirnov on SPSS 16. Paired Sample Test statistics and for abnormally distributed data were tested by Wilcoxon statistics. Improved learning outcomes and activities were seen through improved tutor knowledge calculated using the normalized Gain formula. In determining the effectiveness of 3D animation media about nutritionally balanced food to knowledge in early childhood teachers had seen from the measurement of data results of pretest and posttest.

3. Results

3.1 Description of Respondent

1) The Characteristic of Respondent Based on Age

Data collection was conducted by using questionnaires on 23 samples in Bekasi area that consisted of Al Azhar 24 Kindergarten in Jatikramat and Al-Azhar Syifabudi Kindergarten in Jatibening. Based on the results of data collection characteristics of respondents by age can be seen in table 1 below:

Table 1: Distribution of Respondent Based on Age

Age	**Total**	**Percentage (%)**
20-30 years old	12	52
31-40 years old	9	39
41-50 years old	2	9
Total	**23**	**100**

Source: Primary data is processed

The result of data collection of respondents according to age as shown in table 5.1 is known that the age of Early Childhood Tutors range of 20-30 years as many as 12 people (52%), age 31-40 years as many as 9 people (39%), while ages 41-50 years 2 people (9%). Based on the results of collecting data, characteristics of respondents can be seen that the Early Childhood Education Tutors as a respondent in Al Azhar 24 Kindergarten in Jatikramat and Al-Azhar Syifabudi Kindergarten in Jatibening mostly aged with a range of 20-30 years and 31-40 years.

2) The Characteristics of Respondent Based on Last Education

Table 2: The Distribution of Respondent Based on Last Education

Education	**Total**	**Percentage (%)**
SMA/SLTA/SMK	3	13
D1	2	9
D3	1	4
S1	16	57
S2	1	17
Total	**23**	**100**

Source: Primary data is processed.

The results of collection data of respondent's distribution according to the last education as shown in table 2. it is

known that the last education Early Childhood Tutor by high school/high school/vocational as much as 3 people (13%), education last D1 graduate as much as 2 people (9%), D3 only 1 person (4%), then the last education graduate S1 as much as 16 people (70%), while the last education S2 only 1 person (4%).

3) The Characteristic of Respondent Based on Teaching Experience

Table 3: The Distribution of Respondent Based on Teaching Experiences

Teaching Experiences	**Total**	**Percentage (%)**
1-10 years	17	74
11-20 years	6	26
Total	**23**	**100**

Source: Primary data is processed.

The results of data collection of respondents according to the last educational data as shown in table 3 is known that the teaching experience with 1-10 years to Early Childhood Tutor as many as 17 people (74%) and teaching as Early Childhood Tutor 11 -20 years as many as 6 people (26%).

3.2 Descriptions of Pre-Test of Balanced Nutritious Food Knowledge

The average pretest score of respondents' knowledge about balanced nutritious food is 48.78 with less category, median score of 43.48 with less category, mode score of 69,57 with enough category, lowest pretest score of 13.04 and highest knowledge score 86.96. And the standard deviation value of 22.13. After categorized according to [2], the distribution of respondents according to data pretest knowledge as presented in table 4 below:

Table 4: *Pre-Test Data of* Balanced Nutritious Food Knowledge

Level of Knowledge	**Total**	**Percentage (%)**
Good (76%-100%)	2	9
Enough (65% - 75%)	6	26
Less (>65%)	15	65
Total	**23**	**100**
Mean	**48,78**	**Less**
Median	**43,48**	**Less**
Modus	**69,57**	**Enough**
Maximum	**86,96**	**Good**
Minimum	**13,04**	**Less**
Deviation Standard	**22,13**	

Source: Primary data is processed.

According to the results, the level of knowledge before applied 3D animation media about balanced nutritious food has good knowledge that is as much as 2 tutors (9%), level of knowledge enough as much as 6 people (26%), and who have less knowledge level as much as 15 people (65 %).

3.3 Description of Post Test Data Balanced Nutritious Food Knowledge

The average pre-test score of respondents' knowledge about balanced nutritious food is 80.78 with good category, 82.61 for median score with good category, 78.26 for mode score with good category, 52.17 for lowest knowledge score and 100 for the highest knowledge score and 10.05 for standard deviation.

Table 5: *Post Test* Data of Balanced Nutritious Food Knowledge

Level of Knowledge	**Total**	**Percentage (%)**
Good (76%-100%)	18	78
Enough (65% - 75%)	4	17
Less (>65%)	1	4
Total	**23**	**100**
Mean	**80,78**	**Good**
Median	**82,61**	**Good**
Modus	**78,26**	**Good**
Maximum	**100**	**Good**
Minimum	**52,17**	**Less**
Deviation Standard	**10,05**	

Source: Primary data is processed.

According to the results of the research note that the level of knowledge after applied 3D animation media about balanced nutritious food has good knowledge that is as much as 18 tutors (78%), level of knowledge as much as 4 people (17%), and who have less knowledge as much as 1 person (4 %). The tutor's knowledge can be obtained both internally and externally. Internal knowledge is knowledge that comes from itself based on life experience. External knowledge is knowledge gained from others including family and media. Good knowledge gained internally and externally will increase knowledge about nutrition [1]. Another factor that can add to the tutor's knowledge is the impressions on 3D animation media.

3.4 Testing Data Analysis

1) Results of Normality Test

Table 6: Normality Test

Knowledge Data	**Asymp. Sig. (2-tailed)**	**Kolmogorov-Smirnov Z**	**Hipotesis Table (n= 20)**	**Note**
Before (*Pre-Test*	0,463 > 0,05	0,851	0,851 > 0,294	Normal Distributed
After (*Post Test*)	0,493 > 0,05	0,832	0,832 > 0,294	Normal Distributed

Based on data, pre-test and post test application of 3D animation media to the knowledge of Early Childhood Education Tutor are normal distribution. So it can be continued testing hypothesis using parametric test that is paired sample test.

2) Results of Hypothesis Test

Comparison of balanced nutrition knowledge before and after giving of 3D animation media can be seen in Table 7 below:

Table 7: Comparative Knowledge of Balanced Nutrition before and After Granting of Animation Media

Knowledge Data	**Average**	**p Value**	**t Table**	**Results of t Test**
Before (*Pre-Test*	48.78	0,004	1.71714	6.613
After (*Post Test*)	80.78			

Based on Table 7, it can be seen the average score of knowledge of balanced nutrition before the provision of 3D animation media is 48.78, while the average score of nutrition knowledge balanced after giving 3D animation media is 80.78. The difference of value is 32. Paired Sample Test results obtained p-value = 0.004 <α (0.05) hence, there is a significant difference in the average score of knowledge of nutrition balance after giving intervention in the form of 3D animation media. The result of t test of one sample obtained 6,613 for t-count that converted into 1.71714 for t-table with df = 22. Because t-count> t-table, so Ho rejected mean there is influence of 3D animation media about nutritionally balanced food to Early Childhood Tutor's knowledge.

3) Results of Increase of Knowledge

The increase value is 0.625. The value is interpreted into the Gain value classification table (Hake, 1998, p.3) is in the range of 0.7> (N-gain) ≥ 0.3. Thus, the improvement of Early Childhood Tutor knowledge by applying 3D animation media about balanced nutritious food is in the medium category.

4) Results of Effectiveness

Based on the results of the data the average score obtained shows the description of 3D animation media effectiveness balanced nutritious food to Early Childhood Tutor's knowledge shows the average percentage value before applied 48.78 is converted to the percentage of 49% indicates the scale criterion is not effective. While the average percentage value after applied 3D animation media is 81% indicates effective criteria [12]. Based on this Early Childhood Tutor's knowledge Data after applied 3D animation media balanced nutritious food more effective than the value of knowledge before applied media.

4. Discussion

The average pretest score of respondents' knowledge about balanced nutritious food is 48.78 with less category. The knowledge tested in this research is knowledge of balanced nutrition messages. Measurement of Early Childhood tutor's knowledge about balanced nutrition food in this research is done by using test. The nutritional knowledge of a person according to [3] that can be assessed based on the respondent's answer to the question given according to the questionnaire submitted. Pre-test in this research was conducted to determine the basic knowledge of respondents about balanced nutrition messages. The low knowledge of Early Childhood tutors during pre-test is in line with [3] which shows that at the time of pre-test the average score of knowledge in grade IV and V students at SD Mardi Yuana Depok is still in low category is amounting to 31.69 One of the factors that led to the still low knowledge of students is the lack of socialization and knowledge about balanced nutrition. Similarly, it was stated by [10] that in 2003 and 2005 the Ministry of Health of Indonesia issued Guidance Book of Balanced Nutrition but lack of socialization and publication about it make people less familiar with guidance of balanced nutrition. The average pretest score of respondent's knowledge about balanced nutritious food is 80.78 with good category. Based on statistical tests conducted on the average knowledge of balanced nutrition has showed an increase in knowledge score after given the intervention in the form of 3D animation media. Knowledge according to [6] influenced by various factor one of them is education or education.

Education is one tool to produce changes in human beings, because through human education will be able to know everything that is not or not previously known. Education is defined as a process with certain methods so that people acquire the knowledge, understanding and manner of behavior that suits their needs. Nutrition education is needed to improve the nutritional knowledge of tutors, forming a positive attitude towards nutritious food in order to establish good eating habits. The main reason causing the increase of knowledge about the balanced nutrition according to [4] is through educational media used and the way of delivery of educational materials. Educational media serves to deploy the senses as much as possible to an object to facilitate perception. Educational media make a person more able to understand information or material that is considered complicated becomes easier. In this case, the media of nutrition education used is audiovisual media that is an animated media with the theme of balanced nutrition. In relation to the animation media, [7] suggested that animation is a form of pictorial presentation of the most interesting, which is a simulation of moving images that describe the movement or movement of an object. The use of animation in the learning process is very helpful in improving the effectiveness and efficiency of the teaching process, as well as increased learning

outcomes. In addition, the use of learning media especially animation can increase attractiveness, as well as motivation in following the learning process.

Paired Sample Test result obtained p-value = 0.004 <α (0.05) hence, there is a significant difference on the average score of knowledge of nutrition balance after giving intervention in the form of 3D animation media. The result of t-test of one sample obtained 6,613 for t-count that converted into 1.71714 with df = 22. Because t-count> t-table, so Ho rejected means there is influence of 3D animation media about nutritionally balanced food to early childhood tutor's knowledge. The increase value obtained by 0.625 is in the medium category. Increased knowledge of respondents with the method of animation media because the counselor provides the process of teaching and learning on the respondents by utilizing all the tools senses and play the animation media as much as 3 times the playback. [5] in the results of his research also shows the use of animation media viewed from the motivation of achievement and early ability in general biology learning have a significant influence on student learning outcomes, and shows that the learning outcomes of students who are taught using animation media is higher than students are taught without using the media animation. The use of animation media, learning achievement is better than using the module. Research shows that there is an interaction between motivation and initial ability to general biology learning achievement [5]. Based on the results of the data the average score obtained shows the description of 3D animation media effectiveness balanced nutritious food to early childhood tutor's knowledge shows the average percentage value before applied 48.78 is converted to the percentage of 49% indicates the scale criterion is not effective. While the average percentage value after applied 3D animation media balanced nutritious food to early Childhood tutor's knowledge is 81% indicates effective criteria [12]. Based on these data, Early Childhood Education Tutors' knowledge after applied 3D animation media balanced nutritious food is more effective than skill value before applied media. The use of anime video media results is better than conventional methods. This is because in the video animation media whose image has a coherent groove in accordance with the main element of writing the narrative is an article that tells an event in a coherent manner. So that the use of video animation media as a medium of learning to write narrative has several advantages, among others, able to increase understanding, interest and skills of students to the material submitted by the teacher, students write narratives become more coherent because the animated film presents a story that has a coherent groove so narrative writing skills increased. In the animated film there is also a narrative and dialogue that uses a varied vocabulary so as to add vocabulary that students can use in writing narrative Other research results show increased knowledge and attitude of healthy snack consumption equal to 0.317 for knowledge and 0.180 for post-intervention attitude using animation media. Based on the data and description above, this is in accordance with the opinion of [11] that one of the benefits of using multimedia learning that teaching will attract more learners so that it can foster motivation to learn. So it can be concluded there are differences in early childhood tutoring skills in Al Azhar 24 Kindergarten in Jatikramat and Al-Azhar Syifabudi Kindergarten in Jatibening before and after using 3D animated media balanced nutritious food.

5. Conclusion

Based on the results and discussion of research, it can be concluded that the average pre-test score of respondents' knowledge about balanced nutritious food is equal to 48.78 with less category. The average pre-

test score of respondents' knowledge about balanced nutritious food is equal to 80.78 with good category. There is a significant difference on the average score of knowledge of balanced nutrition after giving intervention in the form of 3D animation media from Paired Sample Test results obtained p-value = 0.004 <α (0.05). There is influence of usage of 3D animation media about balanced nutritious food to Early Childhood Education Tutors' knowledge based on result of T-test one sample obtained 6,613 for t-count that converted into 1.71714 for t-table with df = 22.

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