THE EFFECT OF EDUCATIONAL GAMES IN THE TEACHING ABOUT OBJECT IMAGES IN KINDERGARTENED STUDENTS

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Abstract
Conventional learning methods in kindergarten could be changed into modern learning methods using the help of information technology in the form of educational games so that students can be motivated to learn to recognize the objects in the game. The purpose of this study is the creation of the learning media for the students in learning to recognize the names of animals and to attract learning interest of the students in using educational games as an alternative learning medium. This study employed Research and Development design (R & D). The results of the study showed the validity of the material aspect was 89.3% and 84.3% for the media aspect. The results of children's responses according to the motivational aspect was 96.29%, the aspect of interest was 79.62%, the aspect of applicability was 90.27% and the aspect of learning advantage was 100%. Based on these results, the educational games can be applied during the learning process at Kadipiro 02 Kindergarten as teaching materials for students to increase children's interest in learning image objects. Therefore, it can be concluded that the children's learning outcome has increased when using the educational games.

INTRODUCTION
The rapid technological development now influences the learning process in elementary schools, the learning material, and the way of material delivery in the process of teaching and learning activities. At the stage of early childhood education, children have the tendency to be more interested in games that are easy to play, have bright colors and animated images that attract attention [3]. Most of the learning media used in the kindergarten are the guidebooks. The case also occurs in the Kadipiro 02 Kindergarten.

The initial survey related to the ability of children to recognize the object image in Kadipiro 02 Kindergarten, Jumapol Subdistrict, Karanganyar Regency revealed that the teacher often used media images from books in introducing images of object. During the introduction of the object, some children were paying attention, while some others were playing by themselves because they were still carried away by the surroundings. The researcher were interested in examining whether educational games can increase children's interest in recognizing the image objects [4] [5].

The conventional learning method is still often used during the learning process. It also results in the children's understanding of the material. However, due to the dynamic of the technology, the learning method needs to be changed into the modern learning methods using the help of information technology in educational games to increase students' motivation to learn to recognize the image objects in the game [2] [6].
Moldstad (1974) argues that ensuring that students can learn effectively is more effective than using all kinds of programmed materials both linear and open branching. One of the effective learning media is by using machines and programs in form of textbooks [2].

The learning media is increasingly developing in various aspects of life. This requires technology developers to create new applications that aim to make learning easier and more interesting for children. Learning process using conventional media is not fun, can result in boredom, monotony, and poor understanding. As a consequence, children would not be motivated to learn.

There are various learning media. One of the very interesting learning media is educational games. The educational game is an alternative learning media expected to be effective as a medium of learning for children, especially preschoolers [7]. Virvou (2005) argues that game technology can motivate learning and involve players, so the learning process is more enjoyable. On the other hand, playing games is an activity that is familiar to most people, both children and adults. [10]

Learning media in the form of educational games is very interesting to be applied to early childhood because it can be used as an alternative learning media in the teaching and learning process in schools. Therefore, the child can easily remember the material conveyed by the teacher because it is presented in an attractive display [11]. In education game aimed to recognize animal name, children learn the names of animals in alphabetical letters by playing the game. As a consequence, children have more knowledge of the names of animals that even they have not even seen before from existing images. If the children do not know how to read the name of the animal, they can click animal names to find out whether or not the pronunciation is correct. By doing so, indirectly the children can quickly remember the names of animals from the picture.

The purpose of this study is 1) to create an educational game as the teaching material to recognize drawing objects, 2) to assist the children to learn about animal name through the help of technology, and 3) to figure the students’ learning interests after using educational games as an alternative learning media in teaching image object recognition.

The benefit of this research is to increase students’ learning enthusiasm about their surrounding objects because of the more interactive learning media. And for teachers / educators, learning media in the form of educational games can be used as alternative learning media to support teaching and learning activities to facilitate the introduction of image objects.

**METHOD OF THE STUDY**

This study employed Research and Development design and was applied in learning activities. The product of this research was the learning media. The following figure illustrates the procedures of the study [1] [9]:

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The procedure of the study consisted of the preliminary study stage, the development stage and the product testing stage. The first stage was the preliminary study. During this first stage, the problems in the learning process were identified. A case study was then conducted to determine the theoretical basis, assess the results of the study, and determine the appropriate research methods. The data obtained by the researchers stated that using conventional methods was still less effective in attracting children's learning interest.

The second stage was the development stage. The products were created and then validated by media and materials experts. Validation of media feasibility was conducted using a closed questionnaire covering aspects of material and media.

The third stage was the product-testing phase. The product which was validated by media experts and material was tested on the sample. The samples for product testing in this study were all Kadipiro 02 kindergarten students in Jumapolo sub-district, Karanganyar regency. After the testing,
the results of the testing were in the form of children's responses to learning media. The results were in the form of percentage for each aspect of the observation questionnaire.

Data were collected using observation and questionnaire. The observation was conducted to figure out the effect of the implementation of the interactive learning media, as well as the mastery of children in recognizing the object image. The questionnaires were used to measure the feasibility of learning media, as well as for the validity of the media that have been created and used during the learning process in kindergarten.

RESULTS AND DISCUSSION

This study developed the educational games as the alternative teaching material to introduce the name of the animals and to find out the interest of children in learning after using educational games during the learning process.

The Adobe Flash CS6 program was used in creating the game. The result of learning media created with the Adobe Flash CS6 program was stored in an extension file (.exe). Therefore, the learning media program can be run on any computer without installing the Adobe Flash CS6 master. The flash files produced in this learning media were 2 files (.fla), there are 2 files (.swf), and 1 file (.exe). All files were placed in a folder that cannot be separated. If 2 files (.swf) were not integrated with the file (.exe), then the learning media program cannot be run perfectly. The file given to the teacher is a file (.exe) that cannot be changed.

The visual appearance of the object image recognition learning media is as follows.

1. Home Page View

   ![Figure 2. Home Page Display](image)

   This homepage is an opening page that displays the logo, title, identity of the university and start button. The design results of the home page can be seen on the figure 2 above.

2. Profile Page Display

   ![Figure 3. Profile Page Display](image)
The profile page contains the identity of the developer. At the top of the profile page, a default menu is displayed on each page. The menu is Home, Profile, Menu, and Exit. The profile page can be seen on the figure 3 above.

3. Menu Page View

![Menu Page View](image)

On the menu page, there are 2 submenus namely Material and Questions. At the top of the menu page, a default menu is displayed on each page. The menu is Home, Profile, Menu, and Exit. The menu page can be seen on the figure 4 above.

- Material menu contains the learning material for the students.
- Question menu is contains question for the students to test what they have learned from the previous material.

4. Page Display Material Submenu

![Display of Material Submenu](image)

This page displays a selection of alphabets from AZ that represent the name of the object, so children can learn them more easily. At the top of the page, there is also a default menu. Page view from the material menu submenu is shown above.

5. Page View of the Submenu content From the Material Menu

![Display the submenu page from the material menu](image)
The contents page of the submenu from the material menu displays an image of the object, the name of the object. If the name of the object on the display was clicked, there will be a sound how to read the name of the image object, and the next button used to proceed to the next material and the back to menu button to return to the submenu.

6. Home Page Display From the Question Menu

![Image of the home page from the question menu]

**Figure 7. Display of the Home Page from the Question Menu**

This page is the homepage from the question menu which displays the invitation words and the home button to return to the main homepage and the next button to go to the next page.

7. Page Views From of the Question Menu

![Image of page views from the question menu]

**Figure 8. Page Views From of the Question Menu**

This page display shows the image of the object. There are two buttons which are the choices of which name matches the image displayed. If the button on one of the names is clicked, there will be a display that shows whether the child's answer is right or wrong.

8. The following picture is displayed if the answer is correct

![Image of the correct answer display]

**Figure 9. The correct answer display**
This page shows the correct answer display. Here is a moving animation, words that show the correct answer and the next button that directs to the next question page. The picture can be seen on the figure above.

9. The incorrect answer display

![Incorrect Answer Display](example_image)

Figure 10. The incorrect answer display

This page displays the incorrect answer. The moving animation is shown, the written text containing motivation for the students to try again if the child's answer is wrong, and there is a next button that will show to the exit page.

10. Exit Display

![Exit Display](example_image)

Figure 11. Exit Display

This display shows the words thank you, see you and congratulations on learning and the exit button.

The media validation stage was carried out on the aspects of material and media. This stage involved by experts as learning media. The validation on the material aspect was carried out by one of the Kadipiro 02 Kindergarten teachers. The evaluation on the media aspect was carried out by three media experts who were lecturers of Universitas Negeri Semarang. Validation of learning media was performed by submitting closed-ended questionnaires that contain close-ended questions that have been prepared according to the analysis of the needs of learning media for kindergarten students. These questions included certain points that have indicators and criteria in each aspect.

The results and analysis of the learning media validation on the material and media aspects can be seen in Table 1 and Table 2 below:
Table 1. The Results of Questionnaire on Material Aspects

<table>
<thead>
<tr>
<th>No.</th>
<th>Aspects</th>
<th>Indicators</th>
<th>Score</th>
<th>Score on Every Aspect</th>
<th>Max Score on Every Aspect</th>
<th>Range Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Suitability</td>
<td>The learning material is suitable with the theme</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>2</td>
<td>Clarity</td>
<td>Presentation of material is clear</td>
<td>3</td>
<td>6</td>
<td>8</td>
<td>Agree</td>
</tr>
<tr>
<td>3</td>
<td>Clarity</td>
<td>Presentation of material is easy to understand</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Attractiveness</td>
<td>Presentation of material is interesting</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>5</td>
<td>Variation</td>
<td>The learning material is varied</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>Agree</td>
</tr>
<tr>
<td>6</td>
<td>Material</td>
<td>Material presentation is very limited</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>Agree</td>
</tr>
<tr>
<td></td>
<td>presentation</td>
<td>limits</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Suitability</td>
<td>The game is in accordance with the learning material</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>8</td>
<td>clarity</td>
<td>The game is easy to understand</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>Agree</td>
</tr>
</tbody>
</table>

Score Total: 27  
Media Quality Percentage: \(\frac{27}{32} \times 100\% = 84.3\%\)  
Media Quality Category: Very appropriate

Table 2. The Results of the Questionnaire on Media Aspects

<table>
<thead>
<tr>
<th>No.</th>
<th>Aspects</th>
<th>Indicators</th>
<th>Score</th>
<th>Score on Every Aspect</th>
<th>Max Score on Every Aspect</th>
<th>Range Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Display design</td>
<td>Fonts are easy to read</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Display design</td>
<td>The colors are appropriate and not flashy</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Display design</td>
<td>Menu layout, material and buttons are appropriate and good</td>
<td>10</td>
<td>33</td>
<td>36</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>4</td>
<td>Picture illustration</td>
<td>Illustration of images according to the theme of the learning material</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Picture illustration</td>
<td>The illustrations are clear and easy to understand</td>
<td>11</td>
<td>31</td>
<td>36</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>6</td>
<td>Picture illustration</td>
<td>The illustrations are interesting to see</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Instructions</td>
<td>Instructions for using media are easy to understand</td>
<td>10</td>
<td>10</td>
<td>12</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>8</td>
<td>Instructional Media</td>
<td>Innovation in developing learning media used ICT</td>
<td>11</td>
<td>44</td>
<td>48</td>
<td>Strongly agree</td>
</tr>
</tbody>
</table>
9 The learning media is user-friendly
10 Buttons and navigation can be used properly
11 Learning media can function properly

<table>
<thead>
<tr>
<th>Total Score</th>
<th>118</th>
<th>118</th>
<th>132</th>
</tr>
</thead>
<tbody>
<tr>
<td>Media Quality Percentage</td>
<td>$\frac{118}{132} \times 100% = 89.3%$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Media Quality Category</td>
<td>Very Appropriate</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

After evaluation and validation were carried out by material experts and the media, the average percentage results from all the criteria for alternative learning media for kindergarten students in the material aspects were 84.3% and it was categorized as very appropriate. In addition, the average percentage for the media aspect is 89.3% and it was categorized as very appropriate. This categorization was based on a range of predefined learning media criteria.

To investigate the children's interest in learning using alternative learning media as teaching material for object recognition, researchers observed children by marking each indicator by placing a check mark (√) on the range of questionnaire answers that are considered appropriate, namely (4) very interested / really capable, (3) interested / sufficiently capable, (2) less interested / less capable, and (1) not interested / unable.

After that the results of the questionnaire were analyzed using the percentage of values obtained from each aspect, namely the number of values per aspect divided by the number of maximum score and multiplied by 100% as stated by Haryadi in Susanto (2012: 75) as follows: [8]

$$P = \frac{f}{N} \times 100\%$$

Information:
$P =$ Percentage
$f =$ the frequency or the score
$N =$ Number of cases or maximum score

To determine the category of response given by students to an aspect by matching the percentage results with positive criteria according to Khabibah (2006) in Wulandari and Waryanto (2012), namely:

- $85\% \leq$ response = very positive (very high)
- $70\% \leq$ response $<85\%$ = positive (high)
- $50\% \leq$ response $<70\%$ = less positive (less high)
- response $<50\%$ = not positive (not high)

Table 3. Results of the Child Response Questionnaire

<table>
<thead>
<tr>
<th>No.</th>
<th>Aspect</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Motivation</td>
<td>96.29%</td>
</tr>
<tr>
<td>2</td>
<td>Attractiveness</td>
<td>79.62%</td>
</tr>
<tr>
<td>3</td>
<td>Convenience</td>
<td>90.27%</td>
</tr>
<tr>
<td>4</td>
<td>Benefit</td>
<td>100%</td>
</tr>
</tbody>
</table>
The results of the child's response questionnaire for the motivation aspect showed a percentage of 96.29%, the aspect of attractiveness showed a percentage of 79.62%, the convenience resulted in a percentage of 90.27%, and the benefit aspect resulted in a percentage of 100%. Those four aspects showed the child's response is very positive, so it can be seen that the high interest in children's learning towards alternative learning media in the form of educational games as teaching material for image object recognition.

Based on the results of media validation, it was found that the media was feasible to be applied in kindergarten as an alternative learning media. The calculation of results was performed by dividing total score of each aspect with the maximum score of each aspect then multiplied by 100%.

Based on the results of the four aspects of observation sheet on the trial of product showed a very positive response of children to the use of alternative learning methods in the form of educational games for teaching object image recognition material. It can be seen from the results of the average presentation of the four aspects of observation. The children's interest is very high in the use of alternative learning media in the form of educational games for teaching material on image object recognition. This description is in accordance with Hamalik's (1986) opinion in Arsyad (2011: 15) which suggests that the use of instructional media in the teaching and learning process can generate new desires and interests, generate motivation and stimulation of learning activities, and even bring psychological influences on students.

The benefits of the results of this study are that the media that was made feasible to be used as an alternative learning media in kindergarten. By using this program, the children do not get bored quickly because children can participate in learning by trying to run learning media and if children at home have adequate facilities, then they could try to learn by yourself at home. The media is easy to run, the menu buttons are clearly located and their information. As well as for teachers, the alternative learning media in the form of educational games is more efficient in storing them, easier in explaining the material to kindergarten children, saving time because the material has been arranged in such a way as to be easy to use.

CONCLUSION

The conclusions of this study are as follows: (1) Alternative learning media to improve the basic competency of image object recognition for preschool students is appropriate to be used as a supporting media for the learning process. (2) The use of educational games is still rarely found. Therefore, many children are still unfamiliar with their usage. In addition, many children do not have similar program at home so that when children practice there are still some who are shy and do not dare to run. The teacher must teach them slowly so that the child could run the program according to the instructions of the teacher. (3) The results of the children's response questionnaire from the four
aspects showed the child's response was very positive, so it can be seen that the learning interest of children towards alternative learning media in the form of educational games as teaching material for image object recognition is high.

REFERENCE