Development of alphabet maze media for beginning reading skills for children

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Abstract

Reading ability affects children's success in understanding learning material. Teachers who are less creative in carrying out reading activities and the lack of use of learning media have an impact on children so that children have difficulty saying words with good and fluent intonation. This study aims to produce effective, efficient, and interesting alphabet maze media for reading skills. In this research and development, the researcher uses the ADDIE development model. This model uses a five-step development procedure: analysis, design, development, implementation, and evaluation. The data collection instruments used in this research and development are questionnaires and observations. The data analysis technique used in the research and development of the alphabet maze media is in the form of quantitative data and qualitative data. The results shown from the analysis of product development of alphabet maze media have the achievement of eligibility or validity in the form of very valid, in terms of effectiveness very effective, aspects of efficiency are very efficient, attractiveness aspect is very interesting. Based on these percentages, the researchers can conclude that alphabet maze media for early reading skills is said to be very valid in terms of aspects of effectiveness, aspects of efficiency, and aspects of attractiveness. Applying this media also makes it easier for teachers to adjust teaching to children. In addition, the success of using the alphabet maze media was shown in the attitude of the children, who were enthusiastic and more enthusiastic about learning to read at the beginning.

INTRODUCTION

Reading comprehension as part of literacy competence is very important to develop academic language skills to succeed in school (Jang et al., 2013; Heriantoko, 2013; Abidin et al., 2021). Reading ability determines children's success in understanding learning material (Hasanah & Lena, 2021; Fauziah, 2018; Rahmi & Marnola, 2020). Children can understand lesson messages packaged in LKA or LKS (student worksheets) through this ability. Reading is the main thing from the child's language aspect, which is used to understand all the contents of learning material (Subandiyah, 2015; Hidayah & Hermansyah, 2016; Gustiawati et al., 2020). Children will have problems understanding various subjects when they enter further education if they cannot read (Winarti & Suryana, 2020; Nurlaeni & Juniarti, 2017; Fauziah,
Children's reading skills make it easier to learn and understand the reading content in each subject.

Interest can arise because of something that makes children pay attention and be interested in reading (Nursalina & Budiningsih, 2014; Simbolon, 2014; Maharani, 2017). Interest in reading should be inculcated early because children experience significant growth and development during the golden age to correctly accept activities given to their environment (Ikawati, 2013; Cahyani & Rasydah, 2020; Widya & Psi, 2021). Slowly children are taught to learn to read according to their stage of development to accelerate their initial reading ability (Ulfah & Rahmah, 2017; Azkia & Rohman, 2020; Winarti & Suryana, 2020). As they get older, their interest in reading also increases.

Reading is the main way to understand knowledge and get new information about learning (Nofitri & Noveria, 2020; Patiung, 2016; Sudarsana, 2014). Theories and empirical evidence have shown that reading can enrich vocabulary and improve children's reading skills through various pathways (Price & Kalil, 2019; Pellicer-Sánchez et al., 2021; Markus et al., 2017; Wulandari et al., 2019). Through reading, children's wisdom will increase both in quantity and quality. In addition, through reading, children will more easily understand the content of the material without complicated activities such as experiments, carrying out the discovery learning process, and so on that require more energy, time, and thought (Laily, 2014; Ariyati, 2015; Kurnia, 2017). Based on the Minister of Education Regulation Number 137 of 2014 (appendix 1), early reading has a standard level of child development (STTPA) which is explained in the literacy section children aged 5-6 years are, as follows: (1) Children able to name familiar symbols, (2) the child is suitable for listening to the sounds of the original letters from the names of objects in the child's environment, (3) the child can name groups of pictures that have the same initial sound/letter, and (4) children can understand the relationship between sounds and letter shapes.

Children must receive proper guidance so that aspects of child development can optimally improve according to the child's developmental stage (Wijayanti, 2019; Elihami & Ekawati, 2020; Skene et al., 2022). The early reading activities should be given through learning media because the characteristics of children are easily bored, and their concentration is minimal. The use of learning media can simplify problems, especially for something foreign and unknown to children, as well as help children to learn things that are less clear (Fahyuni & Bandono, 2015; Supriyono, 2018; Nurhafizah, 2018). The availability of learning media can
make children unsaturated and more concentrated on learning activities for a longer time than without realizing media (Zaini & Dewi, 2017; Mertayasa, 2020; Syafi’i et al., 2020).

Teachers use learning media to convey messages to their students through entertaining learning activities that can improve early childhood development (Zaini & Dewi, 2017; Safira, 2020; Krisdiana et al., 2021). Learning media makes it easier for teachers to deliver learning materials to students to understand the learning materials' clarity. (Ekayani, 2017; Rohani, 2019; Fitriani et al., 2021). In teaching activities, creative media should be used and adapted to the material taught so that teaching and learning activities achieve the expected goals (Supartini, 2016; Abdullah, 2017; Jayul & Irwanto, 2020). The presence of learning media has an important meaning; when the material presented is unclear, it can be assisted by the presence of learning media as an intermediary. In early literacy, good and beautiful literacy media is needed to foster student interest and enthusiasm for learning. When beautiful learning media are held, the ability to remember early childhood will be better than the material presented because the memory ability of young children is extraordinary (Pratiwi, 2017; Nurhalifah & Lestari, 2020; Shunhaji & Fadiyah, 2020).

Learning media is said to be appropriate if it meets the three principles of media feasibility. As described by (Akbar, 2013; Rayanto, 2020; Krisdiana et al., 2021), learning media should be adapted to the object of learning that is effective, efficient, and attractive for early childhood. These qualities can be used as the basis for the feasibility of product development, namely (1) effectiveness aims to achieve learning; (2) efficiency for optimizing time, place, and cost of learning media; (3) attractiveness, interesting media will bring children to learn in a fun way and children are motivated to learn more.

Alphabet Maze Media contains pictures of winding paths that must be passed and obstacles in arranging letters at the final destination according to images with various themes that have been provided. The maze alphabet provides images of various themes that can be removed at the final destination of the maze path, namely fruits, animals, vehicles, the universe, and places of worship. It provides the letters in the fruit image word in the form of pawns. Alphabet Maze Media invites children to play while learning so that children's early reading skills increase. Where in this media, the child can recognize the letters and adjust the letters in the picture-word with several themes provided.

Previous research was conducted by (Yuni & Fatmawati, 2021). During cognitive learning, the media often used were children's worksheets and monotonous media such as simple blocks so that the learning process became less conducive. Three-dimensional maze
media stimulates the aspects of early childhood development optimally and is declared very feasible to be developed. In this study, the researchers only looked at the effectiveness of the maze media in improving reading skills by using the experimental method. This alphabet board game fulfills a valid and practical educational game tool, so it can be used in learning to improve early reading skills. The overall results of the trial of the Maze Alphabet educational game tool are feasible. Children's early reading ability increases by doing word card-playing activities.

The Islamic Kindergarten Jannah Sidomakmur and TK Nawa Kartika VI Katerban have never used maze media. This research and development aim to develop an alphabet maze to improve the early reading skills of children aged 5-6 years in kindergarten institutions in Widodaren District. In this research and development, the researcher provides the concept of a finish that can be removed and paired to adapt to various themes in kindergarten institutions. This fact underlies the researcher to develop a modified maze media using interesting letters and pictures.

METHODS

This study uses research and development methods by applying the ADDIE model. This ADDIE model is suitable for developing products from education and learning resources because the steps are detailed, clear, and simple. The following process is (1) Analyze (analysis stage). In this step, the researcher makes observations to analyze the needs and competencies of students; (2) Design (design stage). At this stage, the researcher designs the alphabet maze and media creation; (3) Development. At this stage, a test is carried out by PAUD experts, namely media experts and children's language material experts, to obtain criticism and suggestions for the feasibility of the alphabet maze media. The results will determine the group and field trials; (4) Implementation. At this stage, a trial is carried out on children, namely group and field trials; (5) Evaluate. This stage is used to evaluate the occurrence of obstacles during the trial, and a data review is carried out. The following are the systematic stages of the ADDIE development model in Figure 1.
The subjects in the trial development of the alphabet maze were (1) trials conducted by media expert examiners and material expert examiners. In each expert, 2 PAUD lecturers had expertise in language development and early childhood learning media. (2) user trials, the procedures that must be passed are: group trials carried out at Islamic Jannah Sidomakmur Kindergarten consisting of 12 subjects, and the field trials were carried out at Nawa Kartika VII Katerban Kindergarten with 23 subjects. The data collection instrument in this study used an observation questionnaire. (1) quantitative data collection using questionnaires from expert examiners and users. To obtain qualitative data, expert examiners and users provided input, feedback, suggestions, and criticisms on the development of this media. (2) To observe children's responses directly, observations were made during group and field trials.

In the data analysis technique applied to the process of developing an alphabet maze, qualitative data and quantitative data are used. Qualitative data were obtained from suggestions and inputs as well as observation notes which resulted in revising the product development of the alphabet maze media. Quantitative data was obtained through a questionnaire in the form of descriptive percentage validation and media effectiveness from the descriptive results of the percentage of material examiners, media, users in group trials, and users in field trials.

RESULTS AND DISCUSSION

A. The Results

Alphabet Maze Media is a learning medium for PAUD institutions, especially for children aged 5-6 years. Therefore, the alphabet maze was designed by adjusting indicators in the KI, KD, and PAUD curriculum, which can optimize the development of literacy language, namely early reading for children. The Alphabet Maze consists of a maze board, theme board, and letter pawns. Maze boards, theme boards, and maze pawns are made of acrylic glass as a base material. The media was designed using the Canva application and printed using vinyl paper.
The following is a design related to the alphabet maze.

1. Alphabet Maze Media consists of various themes: fruits, animals, places of worship, vehicles, and the universe.

2. The Alphabet Maze is arranged on the image at each finish path.

3. Alphabet Maze Media is accompanied by a manual to make it easier for users (teachers) to use it.

The alphabet maze has several advantages and disadvantages. Its colours and images are attractive for children aged 5-6 years. The alphabet maze was designed for children's early reading skills and presented various themes: fruit, animals, places of worship, vehicles, and the
universe. The Alphabet Maze Media was equipped with a manual to make it easier for users (teachers) to use them. It was designed according to KI and KD.

The alphabet maze also had drawbacks. There were only five themes available. Even with the limited themes provided, the alphabet maze still grabs the attention of children aged 5-6 years because this media has been designed with an attractive design so that children do not get bored easily. The development of the alphabet maze was carried out through a gradual review and improvement stage to understand the advantages and disadvantages of the process of developing the alphabet maze. This incremental improvement derives from due diligence by experts and validation by users. The feasibility test by experts was carried out by two material expert validators and two media expert validators. Then, the feasibility test data was obtained from group trials (12 subjects) and field trials (23 subjects). The feasibility test results from the validation questionnaire containing 18 indicators with a 1-5. The indicators included in the validation questionnaire are important parts of the feasibility of a learning media. This component contained six indicators for the effectiveness aspect, six for the efficiency aspect, and six for the attractiveness aspect. The material expert questionnaire consisted of six effectiveness aspect indicators, and the media expert questionnaire consisted of six efficiency and attractiveness aspects. The validation questionnaire for users consisted of 18 indicator points containing 6 points of effectiveness aspects, 6 points of indicators of efficiency aspects, and 6 points of indicators of attractiveness aspects.

The above formula results in a percentage data analysis that can be considered the feasibility of the developed media. Learning media can be valid if it reaches a minimum percentage of 61%. Then to determine the feasibility of media development can be seen in the following table:

<table>
<thead>
<tr>
<th>Criteria achieving (Validity)</th>
<th>Total</th>
<th>Effectiveness</th>
<th>Efficiency</th>
<th>Attractiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Overall</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>81,00% - 100,00%</td>
<td>Very valid</td>
<td>Very effective</td>
<td>Very efficient</td>
<td>Very attractive</td>
</tr>
<tr>
<td>61,00% - 80,00%</td>
<td>Sufficiently valid</td>
<td>Sufficiently effective</td>
<td>Sufficiently efficient</td>
<td>Sufficiently attractive</td>
</tr>
<tr>
<td>41,00% - 60,00%</td>
<td>Less valid</td>
<td>Less effective</td>
<td>Less efficient</td>
<td>Less attractive</td>
</tr>
<tr>
<td>21,00% - 40,00%</td>
<td>Invalid</td>
<td>Ineffective</td>
<td>Inefficient</td>
<td>Not attractive</td>
</tr>
<tr>
<td>00,00% - 20,00%</td>
<td>Very invalid</td>
<td>Very ineffective</td>
<td>Very less efficient</td>
<td>Very unattractive</td>
</tr>
</tbody>
</table>
Data accumulation was carried out from the results of a questionnaire from experts. It was explained earlier that four experts carried out the validation. Two material experts whose questionnaire data contained six indicators for the effectiveness aspect and two media expert validators whose questionnaire data contained six indicators for the efficiency aspect and six indicators from the attractiveness aspect. Furthermore, a feasibility test was also carried out by four users whose questionnaire data contained 18 indicators, namely six for the effectiveness aspect, six for the efficiency aspect, and six for the attractiveness aspect. It can be seen from the accumulation of data as follows:

<table>
<thead>
<tr>
<th>Aspect Validation</th>
<th>Score from Validation</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Expert</td>
<td>User</td>
</tr>
<tr>
<td>111</td>
<td>59</td>
<td>111</td>
</tr>
<tr>
<td>Efficiency</td>
<td>58</td>
<td>109</td>
</tr>
<tr>
<td>Attractiveness</td>
<td>57</td>
<td>116</td>
</tr>
<tr>
<td>(Total)</td>
<td>174</td>
<td>336</td>
</tr>
</tbody>
</table>

The above formula, the percentage of alphabet maze of effectiveness is as follows:

\[ V_{AEfk} = \frac{\sum Tse}{\sum Tsh} \times 100\% \]

\[ V_{AEfk} = \frac{170}{180} \times 100\% \]

\[ V_{AEfk} = 0.9444 \times 100\% \]

\[ V_{AEfk} = 94.44\% \]

The results above show that the alphabet maze media has an achievement of 94.44% effectiveness. Based on Table 1, it is considered very effective. Furthermore, to find out the achievement of the efficiency aspect of the alphabet maze media, it can be analyzed using the following formula:

\[ V_{AEfs} = \frac{\sum Tse}{\sum Tsh} \times 100\% \]

\[ V_{AEfs} = \frac{167}{180} \times 100\% \]

\[ V_{AEfs} = 0.9277 \times 100\% \]

\[ V_{AEfs} = 92.77\% \]

The results above show that the alphabet maze media has an achievement of 92.77% in the aspect of efficiency. Based on Table 1, it gets a very efficient value. To find out the attractiveness aspect of alphabet maze media, you can use the following formula:

55
From the results of the analysis above, the achievement value is 96.11% in the attractiveness aspect, which can be seen in table 1. Then it can be analyzed as a whole alphabet maze media using the following formula:

\[
V = \frac{\sum Tse}{\sum Tsh} \times 100\%
\]

\[
V = \frac{173}{180} \times 100\%
\]

\[
V = 0.9611 \times 100\%
\]

\[
V = 96.11\%
\]

From the results of the overall data, it produces an achievement value of 94.44%. Based on table 1, it gets a very valid value and is feasible to use.

The success of the media developed is in line with research conducted by (Hadiyati & Hartati, 2020; Garwautami, 2020; Hasballah et al., 2021) that maze games can be used effectively to teach letter recognition and reading skills to children. This fact proves that every teacher must have a creative and innovative attitude so that they can create or develop learning media so that children gain new learning experiences in early reading learning activities.

**B. Discussion**

The development of the alphabet maze aims to provide discoveries to make it easier for children aged 5-6 years to improve their early reading skills. The finding in the field indicates that children have problems with reading. This fact is influenced by the lack of an educator or teacher's ability to produce effective, efficient, and attractive media for children. Therefore, the development of the alphabet maze adapts the concept because activities to improve children's early reading skills are carried out with a learning media. Preferably, early childhood is given learning by applying playful learning, a learning activity that can create fun through an interesting game (Fadillah, 2016; Zosh et al., 2017; Colliver & Veraksa, 2019).

Media Maze alphabet is equipped with maze floor plans, letter pawns, and pictures. The drawings at the finish of each maze floor plan can be changed by detaching them, making it easier for the teacher to adjust to the theme taught to the children. From the start until the
intended activity, Pawn letters running on the maze path can stimulate children's reading skills. Children must recognize letters to run the letter pawns to be sorted according to the letters in the finish they are aiming for.

During the media feasibility trial, researchers found that the children looked active and enthusiastic about playing with the alphabet maze media. The reason is, according to the teacher, the alphabet maze is the latest commodity for children. Therefore when reading learning activities, usually only using textbooks makes children easily bored and less enthusiastic about reading learning activities. Meanwhile, children become more enthusiastic and excited to participate in reading learning activities using the alphabet maze. With the child's enthusiasm, the child quickly accepts reading learning material, so the child's early reading ability will increase (Heriantoko, 2013; Muldaniah & Fitria, 2018; Asmonah, 2019).

Furthermore, the children who behave in an orderly manner play in turn. Even though the child actually can't wait to immediately play with the alphabet maze media. They are still waiting for the order of the game by paying attention to friends who play first so that when playing, children can choose letters correctly, and their knowledge of letters will increase. Maze games can be an interesting learning breakthrough to increase a child's knowledge (Viorika, 2019; Kuswanto & Suyadi, 2020; Zikrillah & Humardhiana, 2021).

The success in developing alphabet mazes for early childhood reading skills is in line with previous research (Erika, 2012) entitled improving children's reading skills through word maze games in Padang Kindergarten. The child in the maze game increases at each meeting of the cycle. In other words, the media maze successfully improves reading ability in early childhood. In this study, researchers used maze media by utilizing word cards on the maze path and adjusting to the words and pictures held by the child. In contrast, in the development of the maze alphabet, the letter pawns were adjusted to the image and then ran on the maze path to the finished image.

Furthermore, research from (Heriantoko, 2013) entitled improving early reading skills using the maze game media in class II mild mentally retarded children at SLB/C TPA Jember. This study found that the maze media's initial reading ability in mild mentally retarded children increased significantly. This study used maze media to improve early reading skills in mild mentally retarded children. In contrast, in the development of the alphabet, the maze was used to improve early reading skills in children aged 5-6.
CONCLUSIONS

Alphabet Maze Media is a media designed to improve the early reading skills of children aged 5-6. This research and development show an overall accumulation result of the effectiveness aspect of 94.44% (very effective), 92.77% from the efficiency aspect (very efficient), and 96.11% from the attractiveness aspect. Based on the accumulated results, it can be concluded that the alphabet maze is very feasible to use alphabet maze has limitations. It only has five themes: fruit, animals, vehicles, the universe, and places of worship. However, it would be better to provide all the themes in odd and even semesters so that the theme is complete and more interesting. Therefore, the researcher advises developing an alphabet maze with all learning themes in PAUD.

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