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DEVELOPMENT OF FLIPBOOK MEDIA IN LEARNING AND RECOGNITION OF FLAT BUILDING SHAPES IN STIMULATING CHILDREN'S KNOWLEDGE

Dessy Putri Wahyuningtyas [a*)], Agus Rofi'i [b)], Firman Aziz [c)], Fajriana [d)], Andri Kurniawan [e)]

[a)] *Universitas Islam Negeri (UIN) Maulana Malik Ibrahim Malang, Malang, Indonesia*
b) Universitas Majalengka, Majalengka, Indonesia
c) Universitas Pendidikan Indonesia, Bandung, Indonesia
d) Universitas Malikussaleh, Lhokseumawe, Indonesia
e) Universitas Islam Syekh-Yusuf, Tangerang, Indonesia

[*)]*Corresponding Author: dessyputriwahyuningtyas@gmail.com*

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Abstract. This research aims to develop interactive flipbook media as a learning instrument and introduction to flat shapes for enhancing elementary school students' knowledge. Using the ADDIE model, learning media are created by analyzing the learning requirements and knowledge of children in relation to the material of flat shapes during the analysis phase. In addition, during the design phase, the structure, content, and interactivity are tailored to the requirements of children. The evaluation stage was conducted by three subject matter experts who assessed seven aspects, of which one was rated as excellent, five as acceptable, and one as requiring improvement; specifically, the aspect of student participation and interaction. This study indicates that interactive flipbook media can be useful for teaching and learning about flat shapes in elementary school. This media can increase children's comprehension, interest, and motivation to learn, and help them make connections between the concepts of flat shapes and their commonplace lives.

Keywords: flipbook learning media; introduction to flat building shapes; stimulation of understanding and knowledge

I. INTRODUCTION

Education is a crucial stage in the development of children, during which they are exposed to new concepts and knowledge. The evolution of information and communication technology encourages the education sector to employ technology to the learning process with agility **[1]–[5]**. The use of technology in the digital age creates a new pattern in the learning process, which also occurs in the education of children. Many current learning patterns **[6]–[10]** employ technology-based learning media to facilitate the dissemination of information and knowledge to children. Education is accorded a high priority in all aspects of life **[11]–[13]** According to article 1 paragraph 1A and article 18 paragraph 1 of the National Education System Law of 2003, Childhood Education is organized prior to the primary school level, from birth to age six, through formal education channels in the form of kindergarten **[14], [15]**. The subject of mathematics at the elementary education level includes instruction on flat shapes. Understanding flat shapes is not only essential for daily life, but also for the development of children's logical reasoning and imagination.

The introduction of flat shapes to children requires an interesting and interactive approach so that they can easily understand the concept. In this case, the use of effective learning media is very important **[16]**. One of the learning media that has been proven effective in facilitating learning and the introduction of flat shapes is flipbooks. The concept of flat shapes can be difficult for children to grasp in the abstract. By using flipbook media, children can visually see changes in shape and the relationship between various flat shapes. Study of **[17]** regarding the development of flipbook media will help identify the best way to present information about flat shapes through a clear and orderly sequence of pictures**[18], [19]**, thereby facilitating children's understanding of the concept.

Referring to several previous studies that show **[20]–[22]** Flipbook is media consisting of a series of pictures arranged sequentially and bound on one side. When children turn pages rapidly, the pictures will appear to move or change in sequence. The use of flipbooks in learning and the introduction of flat shapes can provide a fun and interactive learning experience for children**[23]**. By looking at successive changes in images, children can easily understand the characteristics and properties of each flat shape. Other research**[24]** explained the advantages of using flipbooks as learning media, namely the use of flipbooks in learning flat shapes can also stimulate children's imagination and creativity. In the context of learning flat shapes for elementary school children, it is important for educators and teachers to take advantage of the potential of flipbook media in learning and recognizing flat shapes. By providing fun and interactive learning experiences, children can more easily understand these concepts and develop students' logical thinking skills and creativity **[25], [26]**. In addition, the use of flipbook media can also encourage children's active involvement in the learning process, so that they can better build their knowledge

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and understanding of flat shapes. By looking at the importance of learning for children, this research aims to be able to develop flipbook media in learning and recognition of flat shapes, and how the use of this media can provide an effective stimulus in increasing children's knowledge, especially in elementary school children.

II. RESEARCH METHODS

This research is a type of Research and Development. The development model used in making this interactive learning game media is ADDIE. This model is one of the systematic learning design models, the ADDIE model is one of the models that guides the development of education that is efficient, dynamic, and supports education **[27], [28]**. The level of design and development of learning materials, systematic as a procedural aspect of the system approach has been realized in many methodological practices for the design of text development, audiovisual materials and computer-based learning materials **[29], [30]**. This research was conducted at SD Blimbing 2. There are several subjects involved in this research, namely subject matter experts, namely elementary school teachers totaling 3 people and elementary school students totaling 19 students. Data collection uses a questionnaire questionnaire which is used to collect data on the results of the assessment by material experts.

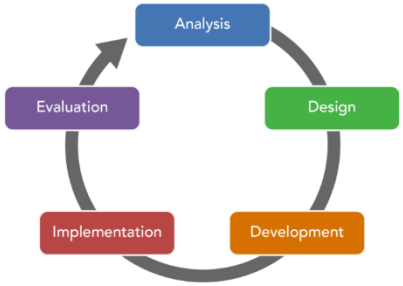

Figure 1. ADDIE Model

The following is the application of the ADDIE model stages in this context:

1. Analysis Phase:
a. Identify learning objectives: Determine specific learning objectives related to introducing flat shapes to children.
b. Investigate children's needs: Analyze children's level of knowledge and understanding of flat shapes, and identify challenges or difficulties they face.
c. Determine resources: Assess available resources, including textbooks, references, and technology that can be used in the development of flipbook media.
2. Design Phase:
a. Determining the structure and content of flipbook media: Designing the structure and content of flipbook media according to the curriculum and learning objectives.
b. Choose appropriate pictures and text: Choose pictures and text that clearly describe the shapes to be studied.
c. Designing the order of presentation: Arranging the order of presentation of pictures and text in flipbook media so that it is logical and easy for children to understand.
3. Development Phase:
a. Making flipbook media: Making flipbook media according to a predetermined design, either manually or by using graphic design software.
b. Implement visual design: Pay attention to visual design factors, such as appropriate size, attractive colors, and layouts that appeal to children.
c. Testing and revision: Test flipbook media with a target group of children, receive feedback, and make revisions if needed.
4. Implementation Phase:
a. Using flipbook media in learning: Applying flipbook media in learning activities, such as presentations, group discussions, or activities based on flipbook media.
b. Facilitating interaction: Encouraging students to interact with flipbook media, asking questions, or doing practical activities involving flipbook media.
5. Evaluation Phase:
a. Evaluate students' understanding of flat shapes after using flipbook media.
b. Analyzing evaluation data to evaluate the effectiveness of flipbook media in stimulating children's knowledge about flat shapes.
c. Make repairs and improvements: If necessary, make improvements and improvements to the media based on the evaluation results from material experts.

Integrate student feedback and recommendations from educators or education experts to improve flipbook media design and content.

III. RESULTS AND DISCUSSION

The purpose of developing interactive flipbook learning media is to introduce material about flat shapes through interesting learning media. In this media, there is visualization that helps create a more enjoyable learning atmosphere, and helps students to recognize flat shapes that exist in everyday life. This is important because knowledge of flat shapes is included in basic knowledge. Therefore, in the development of this flipbook learning media, the shapes used are adapted to the objects encountered in everyday life. Interactive flipbook learning media is a product in the form of an electronic book that not only presents text, but is also equipped with videos, pictures and sound. The function of the various multimedia elements is to explain the text contained in the media. The development of interactive flipbook learning media about flat shapes follows the ADDIE development model which consists of five stages, namely analysis, design, development, implementation, and evaluation. The ADDIE model was chosen because the stages in this model are systematically structured and in accordance with the product development being carried out. By using the ADDIE model, the development of interactive flipbook media on flat shapes is carried out with clear and directed guidelines.

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namely analysis, design, development, implementation, and evaluation. The ADDIE model was chosen because the stages in this model are systematically structured and in accordance with the product development being carried out. By using the ADDIE model, the development of interactive flipbook media on flat shapes is carried out with clear and directed guidelines. namely analysis, design, development, implementation, and evaluation. The ADDIE model was chosen because the stages in this model are systematically structured and in accordance with the product development being carried out. By using the ADDIE model, the development of interactive flipbook media on flat shapes is carried out with clear and directed guidelines.

At the analysis stage, a descriptive analysis was carried out to understand the needs related to surrounding objects that are relevant in the development of interactive game media. This analysis is based on literature reviews and materials relevant to the development of these media. The research was conducted at SD Blimbing 2 with the aim of gaining an understanding of the teacher's explanation to children regarding the material of flat shapes. In delivering material, teachers still use conventional methods such as lectures or direct presentations, which are considered less interesting. This causes students to understand less and tend to feel bored with the material. Therefore, innovation is needed in the delivery of material to increase students' interest and understanding through flipbook learning media. The second stage is the design stage which is carried out after passing the analysis stage. At this stage what is done is to determine and design learning media to be developed. The software used in the development of learning media is the Heyzine Flipbook maker. The purpose of designing this media is in the form of a flowchart to make it easier to understand the flow and procedures of making interactive flipbook learning media in the form of flat shapes. In the process of distributing the questionnaire aimed at determining the feasibility of learning media, this questionnaire was filled in by 3 material experts and 19 elementary school students as subjects of research using media in the teaching and learning process.

In the development stage of flipbook learning media about flat shapes, there are several pages containing flat shape material equipped with videos, pictures, text, and sound. On the initial page there is a cover on the topic of the learning material, followed by a page containing material on the types of flat shapes, namely triangle shapes, rectangular shapes, rectangular shapes and circle flat shapes. Furthermore, the implementation stage explains that in each shape visualization there is an explanatory narrative and equivalent forms that can be seen in everyday life. Of course, if there is a shape that is more familiar to students in their daily lives, this can certainly make it easier for students to understand flat shapes quickly. There is a navigation menu to make it easier to set the page to be read or return to the previous page. In addition there is a zoom menu to zoom in and zoom out the media display as well as a full screen menu and activate the sound feature. The display of flipbook learning media about flat shapes can be seen in the following figure.

Figure 2. Flipbook Learning Media Cover Page

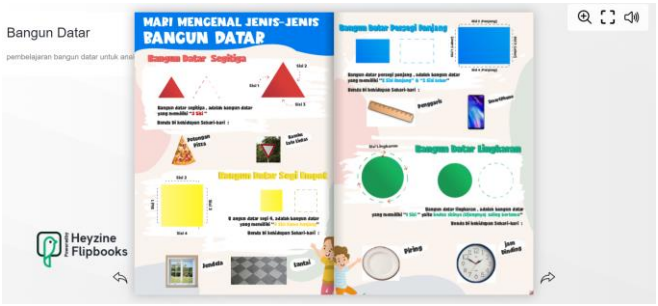

Figure 3. Flat Shape Type Material Page

Figure 4. Cover page of Flipbook Learning Media

The evaluation phase of flipbook learning media in the form of flat shapes begins with the use of this learning media in the teaching and learning process in the classroom, so that the media can be seen and used by student respondents. Furthermore, testing was carried out by 3 material experts, namely the Belimbing 3 Elementary School teacher through a questionnaire. The assessment is carried out regarding aspects (1) suitability of content (2) accuracy of information in the media (3) quality of material visualization (4) clarity of explanation of each material (5) student involvement and interaction (6) use of appropriate language and (7) effectiveness in increasing student understanding. Each aspect of the assessment uses a Likert rating scale, namely a value of 1 to 5 which indicates a scale of 5, which is very good, a scale of 4, which is good, a scale of 3, which is sufficient, scale 2 is lacking and scale 1 is very lacking. The results of the assessment by material experts can be seen in Table 1 below:

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Table 1. Material Expert Evaluation Results

No	Assessment Aspects	Rating Average	Results
1	Content suitability	4,3	Good
2	Accuracy of information on the media	4,5	Good
3	Quality of material visualization	5	Very good
4	Clarity of explanation on each material	4	Good
5	Student engagement and interaction	3,5	Enough
6	Appropriate use of language	4	Good
7	Effectiveness in increasing student understanding	4,3	Good

Based on the results of the evaluation of the material experts in table 1, it can be explained that from the 7 aspects of the assessment, the result was that the suitability aspect of the material content scored in the good category, the accuracy of information in the media was in the good category, the quality aspect of the visualization of the material was in the very good category, the clarity aspect of the explanation of each material received a good category, the involvement and interaction aspects of students received a moderate value category, the use of language aspects received a good category and the effectiveness in increasing student understanding was in the good category. From the assessment of material experts there are aspects of student involvement and interaction that can be improved.

IV. CONCLUSION

In learning and introducing flat shapes, it is important to pay attention to stimulating children's knowledge so that they can understand and apply these concepts well. Learning media, such as flipbook media, can be an effective tool to create an interesting and interactive learning atmosphere. The development of this flipbook media also involves the stages in the ADDIE model, which helps in the planning, development, and evaluation of learning media. By using this systematic approach, the development of flipbook media can be done more purposefully and effectively. By using a flat shape material approach that is adapted to objects in everyday life so that it can make it easier for students to understand flat shape material. From the results of testing 7 aspects of assessment by material experts, the value is obtained in the good category, and there are aspects that can be evaluated to be improved, namely aspects of student involvement and interaction, so that further research suggestions can add alternative quiz menus, assignments or gamification for students in conducting self-evaluation.

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