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Analysis of Interactive Multimedia Need Using Flip PDF Corporate Materials on Simple Space Build Volume for Fifth Grade Elementary School Students

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Abstract: The purpose of this study was to describe the needs analysis of interactive multimedia using flip PDF corporate material on simple volume building materials in Class V of Public Elementary School No. 2 Kuncir. The research conducted was a qualitative descriptive study. The subjects of this study were teachers and students of classes V/A, and V/B at Public Elementary School No. 2 Kuncir, Wonosalam Demak. Data collection techniques using interviews, questionnaires, and observation. Data were analyzed using descriptive analysis. The needs analysis results show that interactive multimedia is needed to support mathematics learning in elementary school. 95% of students need interactive multimedia using corporate flip PDF, and 100% of teacher questionnaire results need to develop interactive multimedia using corporate flip PDF.

Keywords: Interactive multimedia, flip PDF corporate, simple volume building

1. Introduction

The 21st century is marked by the use of information and communication technology in all aspects of life. The development of information and communication technology, when applied in the learning process, will be more effective and efficient, supported by teaching materials or adequate media. The demands of the 21st century in the 2013 curriculum include interactive learning, learning using multimedia, and strengthening critical learning patterns (Rusli et al., 2021).

In the era of the Covid-19 pandemic, the learning process previously carried out face-to-face became online learning. This is a challenge for teachers who are very influential in schools' teaching and learning process (Rulandari, 2020) explained that teachers must re-analyze learning models following the learning process in the pandemic era. Currently, teachers must produce teaching materials or media that are easily accessible to students anytime and anywhere.

Mathematics has an essential role in the progress of science and technology. In addition, mathematics is the knowledge that humans need in everyday life. In mathematics, learning activities usually begin with an explanation of the concept accompanied by examples and then giving practice questions. However, most students think mathematics is complicated and scary. Mathematical concepts are considered problematic because they are full of formulas and numbers (Ahmad et al., 2019). Thus student learning outcomes were less than optimal. Furthermore, student learning outcomes are low because students are less enthusiastic and have difficulty understanding abstract mathematics subject matter (Murod, Utomo, & Utaminingsih, 2021).

This is reinforced by the observations in class V of Public Elementary School No. 2 Kuncir, Wonosalam District, Demak Regency, which found several things that needed attention. First, students still think that mathematics is a complex subject to understand. Second, students do not understand the concept of building space. Third, students still have difficulty solving problems about the volume of geometric shapes. Fourth is the less than optimal use of media. Fifth, the use of teaching materials is still limited. Teachers only use teacher books and student books. This affects the low learning outcomes of students in learning mathematics. The study's results (Ramadianti, Priatna, & Kusnandi, 2019) show that students' mathematics learning outcomes are low because conventional learning students experience misconceptions.

These problems must be overcome to produce interactive multimedia that support learning, especially mathematics. To support the learning process in the technology-based era, it is necessary to develop an electronic module instead of a

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printed module, which can save time and train students from learning independently (Sufiyah & Sumarsono, 2015). The advantage of using electronic modules is that students have many opportunities to study independently (Seruni et al., 2019). In addition, the application of the media-assisted Quantum Teaching model using the Edmodo application can improve student learning outcomes in terms of knowledge and skills (Diantoro, Ismaya, & Widianto, 2020).

Research by Rachmadtullah & Sumantri (2018) explains that interactive multimedia is easy to use and operate by users, so it can be implemented in learning in elementary schools. Furthermore, Harun et al. (2021) research resulted in interactive learning media positively impacting the understanding of spatial structures.

Based on the description above, the researcher aims to develop interactive multimedia using flip PDF corporate to support learning mathematics in elementary school. This study aims to describe the needs analysis of interactive multimedia using flip PDF corporate material on simple volume building materials in Class V Public Elementary School No. 2 Kuncir, Wonosalam Demak.

2. Literature Review

According to Khairani & Sumarsih (2021), media can be interpreted as all forms used to convey messages or information to other parties. Meanwhile, according to Mat Nashir, Zainal, & Sulaiman (2022), multimedia is a medium that uses two or more media elements consisting of text, graphics, images, photos, audio, video, and animation in an integrated manner. Furthermore, interactive multimedia is multimedia equipped with a controller that can be operated by the user so that the user can choose what he wants for the following process (Mayer, 2022). Therefore, interactive multimedia can be a solution to make it easier for students to learn subject matter compared to monotonous textbooks (Armansyah, Sulton, & Sulthoni, 2019).

In this study, researchers used Flip PDF Corporate, a software that has a function to open each page like a book. By using Flip PDF Corporate software, students will be more interested in learning because it contains more attractive displays, and student learning achievements will increase (Sagala & Widyastuti, 2021).

According to Mulligan (2015), the spatial structure is divided into two: the flat side space and the curved side space. First, build a flat side space consisting of cubes, blocks, prisms, and pyramids. Meanwhile, the curved side space consists of a tube, a cone, and a sphere.

In the development of interactive multimedia, the material is limited to the shape of the flat side space, namely the form of a cube and a block. Based on the essential competencies in the 2013 curriculum, the material learned in class V is limited to only the volume of cubes and blocks.

3. Methodology

This study uses a qualitative descriptive research method because to reveal the problems observed. This research is also part of the early stages of development research (R&D) (Sugiyono, 2017).

The subjects of this study were teachers and students of class V/A (22 students) and V/B (23 students) at Public Elementary School No. 2 Kuncir, Wonosalam Demak. The instruments used are interview sheets, questionnaire sheets, and observation sheets. Data collection techniques using interviews, questionnaires, and observation.

4. Findings and Discussion

This study explains the results of the needs analysis for interactive multimedia using flip PDF corporate material on simple volume building materials for fifth graders at Public Elementary School No. 2 Kuncir. The data were obtained from observations, interviews, and questionnaires on the needs of teachers and students.

Observation activities were carried out to discover the problems at Public Elementary School No. 2 Kuncir, including the following.

Table 1. Results of observations of problems that occurred at Public Elementary School No. 2 Kuncir, Demak

No	Observation results
1	Students still think that mathematics is a complex subject
2	Students still have difficulty solving problems about the volume of geometric figures
3	Limited media and not optimal media in learning mathematics
4	Teaching materials are still limited, using only teacher books and student books.

In addition to observations, data were also obtained from interviews with fifth-grade teachers at Public Elementary School No. 2 Kuncir as follows.

Table 2. Results of teacher need analysis interviews for interactive multimedia

No	Interview result
1	The teacher finds it difficult to convey the material contained in the student book because it is less diverse and incomplete
2	Teachers only rely on teacher books and student books when delivering material, so teachers still need to look for materials from other sources
3	Lack of use of learning media
4	Students think math is a complex subject
5	Low student learning outcomes in mathematics subjects
6	Teachers need interactive multimedia in learning mathematics.

Furthermore, to see the results of the questionnaire on the teacher's needs for interactive multimedia can be seen in Table 3.

Table 3. The results of the questionnaire analysis of teacher needs for interactive multimedia

No	Inquired indicator	Results (%)
1	Students have difficulty understanding the volume of simple geometric figures	100%
2	In learning mathematics, the material for simple geometric volumes uses interactive multimedia	0%
3	The media available in schools does not motivate students to learn	100%
4	Requires more exciting and interactive media to learn	100%
5	Requires interactive multimedia on simple volumetric materials	100%
6	The material in interactive multimedia needs to be adapted to core competencies and basic competencies	100%
7	Learning objectives need to be conveyed in interactive multimedia	100%
8	Agree if the material for the volume of simple building blocks is packaged in the form of interactive multimedia	100%
9	Making interactive multimedia needs to be accompanied by pictures	100%
10	There needs to be an evaluation to find out students' understanding of the simple volume building material that has been delivered	100%
11	There needs to be a quiz in learning media	100%
12	Agree if the form of evaluation questions given is multiple choice	100%
13	Need to be given instructions for use in learning media	100%
14	Need to give pictures or animations on interactive multimedia	100%

Summary Table 3 shows the need for interactive multimedia development using flip PDF corporate (point 5) with a percentage of 100%. On the other hand, the use of interactive multimedia in mathematics (point 2) with a percentage of 0% means that teachers have not used interactive multimedia. The results of the questionnaire analysis of student needs for interactive multimedia can show in Table 4.

Table 4. The results of the questionnaire analysis of student needs for interactive multimedia

No	Inquired indicator	Results (%)
1	Simple volumetric material is difficult	90%
2	In learning mathematics, the material for simple geometric volumes uses interactive multimedia	0%
3	The media used in schools is less motivating to learn	90%
4	Requires more interesting and interactive media to learn	90%
5	Requires interactive multimedia for simple geometric volume materials	95%
6	Agree if the material for the volume of simple building blocks is packaged in the form of interactive multimedia	95%
7	The use of interactive multimedia needs to be accompanied by pictures	100%
8	There is an evaluation to find out students' understanding of the simple volume building material that has been delivered	90%
9	There are practice questions in interactive multimedia	90%
10	Agree if the form of evaluation questions given is multiple choice	90%
11	Need to be given instructions for use in interactive multimedia	85%
12	Need to give pictures or animations on interactive multimedia	100%

Based on Table 4, the results of the questionnaire on student needs show that students have difficulty with the volume material (point 1) with a percentage of 90%, and teachers have not used interactive multimedia in mathematics learning (point 2) with a percentage of 0%, students need interactive multimedia in learning mathematics (point 5) with a percentage of 95%.

These results indicate that interactive multimedia development using flip PDF corporate is needed in learning mathematics. During this pandemic period (Setiawan, Ni'mah, & Karolina, 2021) stated the need for developing interactive media-based e-modules as a learning solution in the pandemic era. Interactive modules can meet the need to support active learning and provide flexibility in student-based learning (Sudarman & Ardian, 2021). Furthermore, interactive multimedia is also very much needed in learning poetry writing skills (Khamparia & Pandey, 2018). Therefore, researchers developed interactive multimedia using flip PDF corporate according to the needs of teachers and students in learning mathematics.

5. Conclusions and Recommendations

Based on the results of research and discussion, it can be concluded that there is a need for interactive multimedia development using flip PDF corporate as a support for learning mathematics in elementary schools. Interactive multimedia learning makes the learning process more engaging and dynamic, shortens the learning period, enhances the standard of student learning, and increases students' motivation and interest in education.

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Conflict of Interest

The authors declare no conflicts of interest.

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