APPLICATION: Applied science in Learning Research
Vol. 2 No. 2 October 2022, Page. 62 - 66
E-ISSN: 2797-0655

Development of Android-Based Learning Media Materials for Construction of Flat Side Room Class VIII Junior High School 1 Plandaan Jombang

Khusnul Khotimah[1], Fitri Umardiyah[2]*, Dhuria Ulfa Oktavyanti[3]
[1,2,3] Mathematics Education, K.H. A. Wahab Hasbullah University
*Email: Fitriumardiyah@unwaha.ac.id

ABSTRACT
This study aims to produce android based learning on the material of a flat sidewalk that is feasible to use and as a learning media based on matter expert, media expert, and the opinion of the students. This research is addapted from ADDIE development model, which is the type of research and Development (R&D. There are five stages include: 1) Analysis, 2) Design, 3) Development, 4) Implementation, and 5) Evaluation. Data writing techniques in the form of questionnaire research. Material experts and media experts carry out validation. The developed media was tested on 14 students. The result showed the level of feasibility of the learning media based on: 1) Expert acquisition material total score 3,8 in the category "Valid". 2) Media Experts obtained a total score of 4,4 in the "Very Valid" category. 3) Student Response to this media at the time of testing was distributed on average shows positive with a total score 4,15 in the category "Very Practical". Thus the Android Based learning media is used as a learning medium for students of class VIII SMPN 1 Plandaan Jombang.

Keywords: *Learning Media, ADDIE, Android.*

INTRODUCTION

Education in the process of life is a need that must be met. Education is also one of the things that every human being must prepare to increase the dignity, degree and ability of human beings. Education is an effort to help students's souls, both physically and mentally, from their natural nature towards human and better civilization (Sujana, 2019). Informal and non-formal education also has the same role in shaping personality, especially in children or students (Inanna, 2018).

Formal education in Indonesia starts from primary education to higher education. One of the studies studied at every level of education, even in all branches of knowledge in higher education, is Mathematics. Not only mathematics, but it is also a material that is constantly tested in college entrance exams, regardless of the significant or knowledge taken by the examinees. This shows mathematics's important and strategic role in our education system (Satiti et al., 2022). Mathematics is a subject given at all levels of education because mathematics is said to be the mother of all knowledge, both in the field of technology and in our daily lives, which are always related to numbers and mathematics (Syazali et al, 2017: 178). Mathematics to real-life problems is essential to their Mathematics interest development process (Arthur et al., 2018). Related to this, many problems must be solved to realize the quality of mathematics learning so that it runs even better.The quality of mathematics learning at every level of education needs to be maximized because of the importance of mathematics in modern life. As we know, most the students think that mathematics is complicated and tedious. Therefore, it is necessary to strive for mathematical methods using various learning media to attract students' interest(Khotimah & Kholida, 2022).

Media use in the learning process is one of the efforts to create more meaningful and quality learning (Khotimah & Satiti, 2019).The development of technology and science encourages the world of education always to try to renew and utilize existing technology in the learning process. One example is the use of Android or Mobile Phones. This is where the researcher wants to create an Android application that is expected to help students learn and understand mathematical materials more efficiently and be fun. It could be better if the learning media could also help its users to learn because the attractiveness of Android-based learning media is considered to make users not feel bored quickly. The development of Android-based learning media can be used to create visuals of mathematics teaching aids as supporting materials for mathematics education by utilizing information technology. Interactive multimedia is expected to be one of the alternative media that improves the quality of learning by helping students

understand the material. Interactive media, it can also teach students to be able to use technology appropriately (Khotimah & Wulandari, 2019). Adobe Animate CC is one application that can be used to design and create this kind of learning media. This application is a development of the Adobe Flash Professional CC application with several additional features.

Based on the results of the researcher's interview with one of the educators in mathematics at the SMPN 1 Plandaan Jombang school, students still experience difficulties in learning mathematics in the material of Constructing Flat Sided Space. The learning model applied in the school is a conventional model, namely the lecture and discussion method. This method is expected to help teachers and students make it easier to understand lessons, especially mathematics. The success or failure of learning mathematics can be seen students' learning outcomes. The learning outcomes of students who do not reach the maximum target of this assessment can be overcome by making several ways or efforts to produce the expected mathematics learning objectives. These efforts can be overcome by using appropriate learning methods or interesting learning media.

METHOD

This research is a type of development research, or called as Research and Development (R&D), which aims to produce a product used for learning media. Borg and Gall in Yuliani dan Banjarnahor(2020)mention that R&D research is type of a research used to validate and develop products. Research and development or Research and Development (R&D) is a type of research used to produce a product in the field of education that aims to improve the quality of learning in the classroom, and its development can be in the form of media, teaching materials and learning evaluations (Martianingtiyas, 2019).

The product produced in this development research is in the form of interactive mathematics learning media based on Android in the material for building flat sides for class VIII students. The students referred to in the research are students of Madrasah Tsanawiyah Bahrul 'Ulum Gading Mangu Perak Jombang. The media development model used in this research is ADDIE. The ADDIE model began in the 1990s which Dick and Carry developed. The ADDIE model is used to guide in the development of tools and infrastructure for an effective training program. The ADDIE development model consists of 5 stages, analysis, design, development, implementation and evaluation. Product development in this study is in the form of learning media applications. Media Exerts will assessmthe development media, material experts and students as learning media users.

RESULT AND DISCUSSION

Result

- Analysis

  The students used as research subjects were 8th grade B students of SMP Negeri 1 Plandaan. According to the results of interviews with mathematics teachers at SMP Negeri 1 Plandaan, it is known that the math scores of grade 8 B students are pretty good, but some students have difficulty understanding the material presented. This is because there are differences in abilities between students with one. Based on interviews, it is known that the average learning takes place using the lecture, discussion, and group work methods. In addition, learning also uses classical mathematics teaching aids, so it takes much time so that learning does not reach the expected goals. Researchers develop android-based learning media. The teacher's response to this development is very supportive if researchers develop android-based learning media and try it out in the classroom. The use of android technology in schools is underutilized in learning. So far, Android has not been used optimally, especially in education. Development was carried out by researchers using Adobe Animate. Adobe Animate is an interactive multimedia learning media representing the material presented so that students have the desire to learn. An explanation of multimedia-based learning media is an audio-visual computer application and is used in the form of animation, music, cartoons, etc.

- Design

  The next stage is to make a design of learning media. This design stage consists of compiling a storyboard. Storyboard is used to make it easier to determine the display that will be made in the learning media so that it can make it easier for developers to determine the materials that must be completed. Make a display design, and repair it according to suggestions from media experts and material experts before being tested; try it in class. The display design of learning

media consists of (1) Intro and Instructions for Using Media; (2) Main Menu; (3) SK/KD; (4) Material, which consists of cubes, blocks, prisms, and pyramids; (5) Practice Questions; (6) Evaluation; (7) Profile; (9) Exit Navigation. The learning medua, design is compiled by combining the materials used including navigation, motion animation, sound, images, and text. The following will show a diagram of the media design that will be developed.

- Development

Learning media developed using the Adobe Animate application. In addition, researchers used several supporting applications such as Microsoft Word for text, Microsoft PowerPoint for images, Corel DRAW X7 for processing images, MP3 2 Ogg Lab 2004 for processing sound, and Intel XDK for storing in the form of an android application. The media model generally consists of instructions for using media, the main menu consisting of SK/KD, Materials, Practice Questions, Evaluations, and Profiles. The following is a display of the media that has been developed.

- Implementation

In this implementation phase, a trial of learning media was carried out. The researcher made preparations before conducting the trial. The preparations carried out were introducing learning media to teachers before learning in the classroom and distributing learning media in the form of application to students. Researchers distribute learning media apk to android using the google drive application. The distribution was carried out one day before the trial during the break. The next stage is to test the learning media for students in grade 8 B at SMP Negeri 1 Plandaan, as many as 14 students. The trial was carried out three times, on 17 and 18 June 2022.

- Evaluation

At the evaluation stage, the researcher analyzed the media assessment by media experts and material experts. The evaluation was also carried out by analyzing student response questionnaires, student learning outcomes tests, and media evaluation questionnaires by teachers. This aims to determine the feasibility of the learning media that has been developed.After analyzing the media evaluation and implementation in the classroom, expert lecturers obtained the questionnaire assessment results. The complete media calculation results can be seen in the attachment. The results of expert lecturers' assessment of each aspect can be seen in table 4.1 as follows.

- **Table 1.**Validator Questionnaire Results

No	ValidatorExperts	Indicator Number										Average	Total
		1	2	3	4	5	6	7	8	9	10		
1	Media	4	5	5	4	4	5	5	4	4	4	4,4	44
2	Material	4	4	4	4	4	4	4	3	3	4	3,8	38
Amount												8,2	82
Inclusive Average												4,1	41
Category													Valid

The learning interest questionnaire data were used to measure the students' interest in learning mathematics with flat-sided geometry using android-based learning media. For the student learning interest questionnaire, the following scores were obtained:

- **Table 2.** The Result of the Learning Interest Questionnaire

No. Resp	Amount	Average
1	82	4,1
2	77	3,85
3	97	4,85
4	89	4,45
5	75	3,75
6	82	4,1
7	80	4
8	75	3,75
9	79	3,95
10	88	4,4

No. Resp	Amount	Average
11	84	4,2
12	83	4,15
13	83	4,15
14	82	4,1
Total	**1156**	**4,15**

Based on the table above, it can be concluded that students' responses to the developed media obtained an average score of 4.15 to meet the "Practical" criteria. The complete student response analysis results can be seen in the appendix.

Discussion

Several analyses were carried out at the analysis stage, including student characteristics, situation analysis, technology analysis, and curriculum analysis. This stage is carried out by reviewing relevant theories and conducting interviews with mathematics teachers.The design stage is done by making a storyboard, a design diagram of the learning media, and selecting the components used to make the developed learning media. The components used include; background display, animation, audio, navigation, and preparation of research instruments.

Next is to create learning media using Adobe Animate software. Researchers chose to use Adobe Animate software to develop learning media. After all, this software is simple to create android-based applications because it does not require a programming language so it is easier to create android-based applications. Making learning media is done by creating and selecting the components that will be used. These components are made using PowerPoint to make it easier to use in learning media. After the components to be used are ready, the next stage is the development stage.

The development stage involves making a material script and questions displayed on the media. In addition, the developer uses MP3 2 Ogg Lab 2004 to process sounds that will be used in learning media to attract students' attention. After the learning media has been created using Adobe Animate, the developer must convert the HTML5 file into application form. First, by using Intel XDK software so that learning media can be used on Android. After that, the learning media was validated by two expert lecturers, material experts and media experts. Suggestions and inputs obtained from the validation results are used as a reference for improving learning media. The suggestions and inputs given are adding sample questions, changing the font size to be larger so that it can be read clearly and adding motion animation to the display of the flat-sided building material so that the display can attract the attention of students when using learning media. After being assessed by expert lecturers, the learning media developed were classified as "Good" with an overall average score of 4.1 and the results of the material expert's assessment with an overall average of 3.8 so that the learning media met the validity aspect.

At the implementation stage, the product was tested at SMP Negeri 1 Plandaan Class VIII B, which 14 students attended. Implementation is carried out by distributing products to students' androids and starting product trials in learning. At the trial stage, all students who participated in the learning were enthusiastic. Based on the results of the trial, there are several shortcomings. After learning is complete, teachers and students are asked to fill out a response questionnaire to determine the response of teachers and students to the learning media that has been developed.

The evaluation phase is carried out by analyzing research data through media assessments by expert lecturers and data from student and teacher responses to the developing learning media. Based on expert lecturers' assessment of learning media, the learning media developed obtained an average overall score of 4.4, which was classified as "Good" criteria. In contrast, the results of the material expert assessment obtained an average overall score of 3.8, so it can be concluded that the learning media used met the aspects of validity. Based on the results of student responses, an average score of 4.4 was obtained, which was included in the good criteria and the results of the assessment of the student's interest in learning responses obtained an overall average score of 4.15, which was included in the suitable criteria. From the student response questionnaire results, it can be concluded that the learning media fulfils the practical aspect. Based on the test results of student learning outcomes, the percentage of completeness is 82.6%, with an average value of 81.13, so it can be concluded that the learning media used can improve learning outcomes. Based on the evaluation that has been carried out, it can be concluded that the android-based learning media with Adobe Animate software on the flat-sided building material for 8th grade junior high school students is of quality from the aspect of validity and practicality.

CONCLUSION

Based on the results of research and discussion, it can be concluded as follows.The development is done by making a material script and questions displayed on the media. In addition, the developer uses MP3 2 Ogg Lab 2004 to process sounds that will be used in learning media to attract students' attention. After the learning media has been created using Adobe Animate software, the developer must convert the HTML5 file into apk form. First, by using Intel XDK software so that learning media can be used on android and students can download the application via google drive

From the evaluation conducted by two lecturers of the Department of Mathematics Education, KH. Abdul Wahab Hasbulloh as a material expert and media expert, based on the assessment of aspects of the content of learning materials by material experts and aspects of media display by media experts before being used in learning in schools, the android-based learning media developed was declared feasible to be implemented with improvements.

From the assessment carried out by the teacher, the average overall score of the assessment was 4.1 out of a score of 5 with very good criteria, meeting the "Valid" qualification. Student responses obtained an average score of 4.15 out of 5 to meet the "Good" criteria, and the "Practical" qualifications. Data analysis learning test results, showstudents complete by 82.6%, so it can be said that this media can improve student learning outcomes. Android-based learning media with the Adobe Animate program on flat-sided building materials for 8th grade junior high school students were developed to meet good and practical aspects.

REFERENCES

Arthur, Y. D., Owusu, E. K., Asiedu-Addo, S., & Arhin, A. K. (2018). Connecting Mathematics To Real-Life Problems: A Teaching Quality That Improves Students' Mathematics Interest. *IOSR Journal of Research & Method in Education*, *8*(4), 65–71. https://doi.org/10.9790/7388-0804026571

Inanna. (2018). Peran Pendidikan Dalam Membangun Karakter Bangsa Yang Bermoral. *JEKPEND: Jurnal Ekonomi Dan Pendidikan*, *1*(1), 27. https://doi.org/10.26858/jekpend.v1i1.5057

Khotimah, K, & Satiti, W. S. (2019). Pengembangan Media Pembelajaran Matematika Berbasis Augmented Reality terhadap Hasil Belajar Siswa. *Prosiding Seminar Nasional Multidisiplin*, *2*(1), 99–105.

Khotimah, Khusnul, & Kholida, M. (2022). Pengembangan Game Eduksi Berorientasi Kemampuan Berpikir Kreatif Siswa Materi Limit Fungsi Aljabar Kelas XI. *JoEMS (Journal of Education and Management Studies)*, *5*(3), 22–27.

Khotimah, Khusnul, & Wulandari, K. (2019). Pengembangan Bahan Ajar Berbasis Multimedia Interaktif pada Materi Bangun Ruang Sisi Lengkung Siswa Kelas VI. *JoEMS (Journal of Education and Management Studies)*, *2*(2), 47–54.

Martianingtiyas, E. D. (2019). Research and Development (R&D): Inovasi Produk dalam Pembelajaran. *Researchgate*, *August*, 1–8. https://www.researchgate.net/publication/335227473

Satiti, W. S., Istiqomah, I. N., & Khotimah, K. (2022). LKPD Berbasis Discovery Learning pada Materi Luas Permukaan dan Volume Prisma dan Limas. *JoEMS (Journal of Education and Management Studies)*, *5*(3), 15–21.

Sujana, I. W. C. (2019). Fungsi Dan Tujuan Pendidikan Indonesia. *Adi Widya: Jurnal Pendidikan Dasar*, *4*(1), 29. https://doi.org/10.25078/aw.v4i1.927

Yuliani, W., & Banjarnahor, N. (2020). Perencanaan Dan Keputusan Karier: Konsep Krusial Dalam Layanan BK Karier. *Quanta*, *4*(1), 44–51. https://doi.org/10.22460/q.v1i1p1-10.497