The Development of Fotonovela Learning Media Assisted by Ms Publisher on Arithmetic Sequence and Progression

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ABSTRACT
This research aims to (1) describe the process of developing a fotonovela learning media by using Ms Publisher on arithmetic sequence and progression, (2) to know the results of developing learning media Ms Publisher on arithmetic sequence and progression. Online learning media allows students to access information quickly and more efficiently. This research was processed through the stages of 4D that are define, design, develop, and disseminate. Development research results a product is tested validity, practically, and effectiveness. The research instruments used were questionnaire for needs analysis, validation sheets, test, and student response questionnaire. The subjects of the test were 34 students of XI MIP A 4 SMAN 1 Tempeh. The media validation includes three aspects, namely material and question aspects, content aspects, and language aspects. The result of fotonovela validation including valid criteria with an average of 3.67. Then the effectiveness of media on students learning outcomes included in high level of effectiveness with percentage 88.24%. While the criteria of fotonovela media practicility gets the percentage of student response by 85.23% which is included in high criteria.

INTRODUCTION
Mathematics learning is a process or activity of teachers in teaching mathematics to students, which includes the efforts of teachers to create a climate and service to the abilities, potentials, interests, talents and needs of students about very diverse mathematics so that optimal interaction between teachers and students occurs and between students with other students [1]. A teacher has an important role in designing the learning process, so mathematics is not a subject that always presents tension. One effort that can be used is by using new media in the process of learning mathematics.
Media is everything that can be used to channel messages that can stimulate children's thoughts, feelings, attention, and willingness so that they can encourage the learning process in children [2]. Often learning in schools only uses blackboard media, so that learning is still not utilizing school facilities such as LCD and Computer Laboratory [3]. The existence of new media innovations in learning will certainly increase students' motivation in learning. The use of interactive media teachers and students can shape students' independence in learning, especially on mathematics subjects [4]. One of the new and interesting media for mathematics learning is fotonovela.

Fotonovela is a media that resembles comics or pictorial stories using photographs instead of illustrated images [5]. However, the use of comic media has the disadvantage that not all teachers can make comics, making it takes a long time and comic design is imaginative and far from the daily lives of students, so it takes a new innovation in the form of almost comic learning media fotonovela [6]. Fotonovela can be developed with various applications, one of which is Ms Publisher. In Ms Publisher, teachers can create their own templates to make fotonovela. Various types of letters and sizes can complement the fotonovela being developed. Fotonovela displayed with applicative photos will support the achievement of learning goals. However, the use of this media needs to be guided by a facilitator (teacher) during the learning process.

Fotonovela makes the message to be delivered more easily accepted and understood by students [7]. Fotonovela media that is applied in the classroom makes it easier for teachers to deliver material and students more easily understand what the teacher is saying [8]. Fotonovela presented online will be more efficient, both in terms of time and cost. Online learning media allows instructors and learners to always access various information quickly, responsibly and as expected [9]. The use of online classes can help solve problems that cannot be solved in conventional learning processes [10]. One of the online media that can be used to access fotonovela is Easyclass. Easyclass is one website that can be used for online classroom learning. So that the fotonovela can later be accessed by teachers and students wherever and whenever.

The use of learning media with an attractive visual display is expected to make students more happy and excited in learning to understand the concepts and material in mathematics learning [11]. Fotonovela assisted Ms Publisher can be associated with student problems in the surrounding environment. One of the problems regarding the material line and arithmetic sequence. The use of fotonovela media on the subject arithmetic sequence and progression is expected to facilitate students in understanding the concepts of arithmetic sequence and progression.

Based on the explanation above, the purpose of this study was to describe the development process and to find out the results of the development of fotonovela learning media assisted by Ms Publisher on the subject arithmetic sequence and progression.

METHODOLOGY

This type of research is development research that aims to produce a product that is tested for validity, practicality, and effectiveness. The product developed by the researcher was fotonovela media assisted by Ms Publisher and the results were accessed through the Easyclass website. This research is based on a 4D model consisting of
Define, Design, Develop, and Disseminate. The research flow can be seen in Figure 1 below.

The subjects of the trial in this study were students of class XI of SMA 1 Tempeh as many as 34 students. Data collection methods used in this study are documentation, observation, tests, and questionnaires. Documentation is done to obtain student data, such as student rosters, and teacher teaching schedules. Observations were carried out at the beginning of the study to observe the learning process in schools, facilities and media used in schools. To add more information, the researcher gave a questionnaire of needs analysis to the mathematics teacher to find out the characteristics of students and other information related to mathematics learning in the school. The research instrument was previously validated by 3 validators consisting of 2 mathematics lecturers at Faculty of Teacher Training and Education, Jember University and a mathematics teacher at SMAN 1 Tempeh. After the learning process uses fotonovela, tests are conducted to measure the effectiveness of the media. Fotonovela media assisted by Ms Publisher was effective if at least 75% of all test subjects who participated in learning using assisted fotonovela media Ms Publisher received a minimum score of 75. Fotonovela media was said to be practical if it provided convenience to students during learning, instruments used to measure practicality namely response questionnaire students who were filled in by all the test subjects after attending learning using fotonovela media assisted by Ms Publisher.
RESULT AND DISCUSSION

This research is a development research that aims to obtain a product in the form of fotonovela learning media assisted by Ms Publisher on the subject arithmetic sequence and progression. The arithmetic sequence and progression material used in this study are arithmetic sequences and tables of two-dimensional arithmetic sequences. Fotonovela media consists of 6 parts, each of which contains a problem. Part 1 is about character recognition. Part 2 contains an example of the application of arithmetic sequences to determine how many glasses are in a particular arrangement. Part 3 contains the problem of the arithmetic sequence of cracker sales. Part 4 contains an example of an arithmetic progression application to determine the number of drum band participants. Part 5 contains arithmetic progression problems in savings. Part 6 contains a table of two-dimensional arithmetic tables. The results of the study are processed through the following 4D stages:

a. Define

This stage consists of problem identification, background analysis, and management. The activity on problem identification is to examine the problems in the development of learning media. Identification of the problem begins with how to make observations to SMAN 1 Tempeh to dig up information on the implementation of learning in schools and the media are to be used for learning. The results of these observations are that the learning done at school is still minimal using online media. Even though there are school facilities that support such as the existence of computer laboratories, as well as smooth internet network.

The stage of background analysis is done by giving a questionnaire for analyzing the needs of mathematics teacher at SMAN 1 Tempeh. The questionnaire data obtained shows that the media used in learning are power point slides and teaching aids. However, due to the limited number of LCDs and teaching aids, the use of this media must be alternated with other teachers so that the use of the media becomes less than optimal. To overcome this, blogspot is used to upload some material or assignments.

At the management stage, researchers solve the problem above by developing online media that can be used by teachers and students. Learning media developed are fotonovela media assisted by Ms Publisher, where the storyline is presented in the form of daily life. So that students are expected to be easier to understand. Then the researcher made a scenario and determined the characters to be used in fotonovela. After that, photos and editing are done using Ms Publisher. The fotonovela results are then validated and then uploaded to the Easyclass for students to access.

b. Design

This stage consists of preparation of tests, media selection, and format selection. Test questions were used to determine students' understanding after following learning using Fotonovela media assisted by Ms Publisher. The learning result test problem is located at the end of part 3, part 5, and part 6 on fotonovela. Before being tested, the test questions must first meet the valid criteria of the three validators.

Media selection is based on the results of identification of previous problems. Researchers chose fotonovela media whose use utilizes several features on the Easyclass website. The making of fotonovela is done first by designing scenarios, shooting, and editing. Fotonovela development is done by using Ms Publisher 2013. The editing phase is done by designing the frame first on Ms Publisher's worksheet. Then proceed with inputting the photos that will be used. Next, add a little narration and
text balloons to each dialogue that you want to appear on fotonovela. The look of the fotonovela looks like in Figure 2 below.

![Figure 2. Display Fotonovela](image)

Furthermore, the valid fotonovela file is uploaded to the Easyclass online class so that it can be accessed by all students. The selected fotonovela format is Portable Document Format (PDF). This is because the file size is smaller than the publisher format, so when testing the students can be faster to access fotonovela. The initial appearance of the online class can be seen in Figure 3.

![Figure 3. Class View at Easyclass](image)

Students can interact with other students and teachers by utilizing the comments feature found in the bottom box in Figure 3. While to upload the answers to the test questions, students must enter the assignments section on the left in Figure 3. In the assignments section, students will not find out student answers uploaded by other students.

c. **Develop**

The development phase of fotonovela media asissted by Ms Publisher was done by producing *draft 1* in the form of fotonovela files uploaded to the Easyclass online class. Fotonovela was first validated by the three validators, namely two mathematics lecturers at Faculty of Teacher Training and Education, Jember University and a mathematics teacher at SMAN 1 Tempeh. There are three aspects of media validation, namely material aspects and questions, linguistic aspects, and format aspects. The results of validation by the three validators are presented in Figure 4. After being analyzed, the results of the validation of the three validators obtained an average of 3.67. So that this media is valid and feasible to be tested.
Tests performed on SMAN 1 Tempeh XI with the number of subjects tested as many as 34 students. Trial activities were carried out for two meetings. The first meeting, all students register an Easyclass account using their respective access codes and e-mail. After that learning was done using Photonovela media assisted by Ms Publisher. The second meeting continued learning and carried out learning outcomes tests. The learning outcomes test followed by 34 students produced several categories, as presented in Figure 5 below.

The effectiveness of Ms Publisher's fotonovela media can be seen if at least 75% of the test subjects get a minimum score of 75. Based on Figure 5, there are 30 students who help Ms Publisher score above 75 means 88.24% of students are complete. The response questionnaire of students given a percentage of 85.23% with a high category.

Data obtained through validation, learning outcomes tests, and student response questionnaires showed that fotonovela media assisted by Ms Publisher on arithmetic sequence and progression including valid, effective, and practical.

d. **Dissseminate**

Deployment phase is done in the school where the study tested, namely SMAN 1 Tempeh. The distribution was carried out by introducing fotonovela media and the Easyclass website to the mathematics teacher at the school. Deployment is done by introducing how to make fotonovela, and how to create an Easyclass account, and how to manage online classes. Fotonovela can be accessed via the www.easyclass.com page and log in using the "5YLS-4W1B" code.
CONCLUSION

Ms Publisher aided fotonovela development on the subject of arithmetic sequence and progression developed with 4D development model. Media that is obtained is valid, effective, and practical. The validation results of the three validators stated valid with an average of 3.67. Effectively indicated by the results of student tests after using fotonovela media with a percentage of 88.24% complete the total number of test subjects. Whereas to measure the practicality level of fotonovela media, student response questionnaires were used. The results of the student response questionnaire were 85.23%, so fotonovela media assisted by Ms Publisher was categorized as good. Interactions that occur during learning using Easyclass produce 31 comments on the homepage and 34 upload test results in the assignments section.

In connection with the results of the study, the following are suggested:

a. Students can take advantage of fotovela media as a companion to the main material in learning, so students continue to use books that are in school and use fotovela media as a companion to learning materials.

b. Teachers should be able to develop fotovela for other learning materials. In addition, the Easyclass website should be used to monitor learning outside the classroom such as providing online learning or being used to hold online quizzes outside of classroom learning.

c. Prepare good learning facilities such as LCDs, computers or laptops, cellphones, and a smooth internet connection to access Easyclass online classes.

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