DEVELOPMENT OF PLANET EDUCATION (PLANETION) LEARNING MEDIA BASED ON ADOBE FLASH CS6 IN CLASS VI SCIENCE LEARNING PRIMARY SCHOOL

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ABSTRACT

The aim of this research is to create a product in the form of interactive planetary learning media based on Adobe Flash CS6 on the characteristics of planets in the solar system as a valid, practical and effective learning media for class VI. The aim of this research is to determine the process and effectiveness of using the planetion interactive learning media development product. The method used is R&D *(Research and Development) and the development model uses the ADDIE model. Material validation obtained a score of 97% and media validation obtained a score of 88%. Practicality data obtained from the teacher response questionnaire obtained a score of 97% and the student response questionnaire obtained a score of 92%. Effectiveness data obtained from the results of students' posttest questions received a score of 90. So it can be concluded that the development of planetion media based on Adobe Flash CS 6 software, material on the characteristics of planets in the solar system for class VI students is very suitable for use in the learning process.*

Keywords: Planetion, Validity, Practicality, Effectiveness

ABSTRAK

Tujuan dari penelitian ini adalah untuk menciptakan produk berupa media pembelajaran planet interaktif berbasis Adobe Flash CS6 tentang ciri-ciri planet di tata surya sebagai media pembelajaran yang valid, praktis dan efektif untuk kelas VI. Tujuan penelitian ini adalah untuk mengetahui proses dan efektivitas penggunaan produk pengembangan media pembelajaran interaktif planetion. Metode yang digunakan adalah R&D (Research and Development) dan model pengembangannya menggunakan model ADDIE. Validasi materi memperoleh skor 97% dan validasi media memperoleh skor 88%. Data kepraktisan diperoleh dari angket respon guru memperoleh skor 97% dan angket respon siswa memperoleh skor 92%. Data keefektifan diperoleh dari hasil soal posttest siswa memperoleh skor 90. Jadi dapat disimpulkan bahwa pengembangan media planet berbasis software Adobe Flash CS 6 materi Ciri-ciri planet di tata surya untuk siswa kelas VI sangat cocok digunakan dalam proses pembelajaran.

Kata Kunci: Planetion, Validitas, Kepraktisan, Efektivitas

A. Introduction

In the era of globalization, the development of information technology is increasingly rapid and its influence cannot be avoided, especially in the education sector.

Global demands require the world of education to always adapt to technological developments as an effort to improve the quality of education. Some of the changes that occur can have broad implications for the education sector, such as updates to educational programs and increasing technology-based learning. When learning is supported through technology, educators can determine the right technology to achieve learning in school through the information they have obtained (Mashuri & Syamita, 2023; Arifin & Setiawan, 2020).

Comprehensive learning must pay attention to the characteristics of students, which are divided into auditory, visual and kinesthetic types. The use of technology in learning will bridge these three student interests, so that learning is more enjoyable. An educator in carrying out learning activities can use media, starting from simple ones such as pictures, photos, paintings to the use of sophisticated technology such as LCDs and the use of computers (Walker, 2023).

Media is all forms used in the process of conveying information. Media can also be interpreted as a tool to assist in conveying messages to achieve learning goals. Learning media includes tools used to convey the content of learning material, one of which is digital media. Digital learning media can include software or hardware which functions as a learning aid (Firmadani, 2020; Muthoharoh, 2019).

Based on the results of interviews with class VI teachers at SDN Pangarangan I, namely in science and science learning, the media used included PowerPoint and YouTube videos. The interactive media used is still not able to involve students directly in its use. This is because the interactive media PowerPoint also has limitations which lie in limited tools for editing such as adding animation, design limitations, and not being able to import large size video or audio. Therefore, to overcome this problem, it is necessary to develop interactive media that is equipped with animated images and audio. This interactive media also allows students to carry out learning independently. This media can be developed using software.

One software that can be used to create interactive media is Adobe Flash CS6. Adobe Flash CS6 is known as computer software that can create animation and content (Smith, 2021; Johnson, 2022; Martinez, 2023). The interactive media that researchers developed through Adobe Flash CS6 software is planetion. This Planetion contains learning objectives, learning materials and quizzes. Planetion can also be accessed easily because it is converted into file form. Planetion is an interactive learning media that combines animation accompanied by sound which supports the learning process, and the sentences and language used in these sentences are easy for students to understand.

Based on the description above, researchers are interested in developing interactive learning media in the learning process, namely "Development of Planetary Learning Media (Planet Education) Based on Adobe Flash CS6 in Social Science Learning Material Characteristics of Planets in the Solar System for Class VI Students of SDN Pangarangan I Sumenep". The aim of this research and development is to create a product in the form of interactive planetary learning media based on Adobe Flash CS6 on the characteristics of planets in the solar system as a valid, practical and effective learning media for class VI.

B. Method

Research Design, Procedures, And Material

This research is research into the development of learning media using the Research and Development (R&D) method. The development of planetion media based on Adobe Flash CS 6 software uses the ADDIE model stages which consist of 5 stages, namely Analysis, Design, Development, Implementation, and Evaluation (Brown, 2020; Almelhi, 2021). The aim of using this model is to develop and produce valid, practical and effective products.

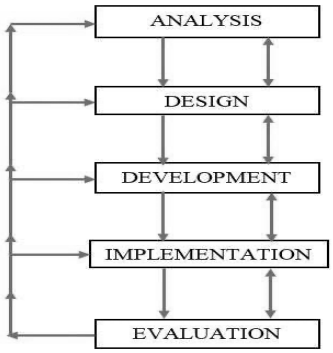


Figure 1. *ADDIE Development Model Design*

The research and development stages of planetary media based on Adobe Flash CS 6 software using the ADDIE model can be seen in the following flow.

1. Analysis stage, namely analyzing the need for interactive media at SDN Pangarangan I Sumenep. Based on an interview with Mr. Fauzi on October 4 2023, researchers received information that the use of interactive learning media in this school is still not able to involve students directly, so it requires more varied interactive media. This is also supported by the researcher's observations on October 4 2023 who observed that the interactive media used in learning were PPT and YouTube.
2. Design (Planning) is the second stage of the ADDIE model. This stage began after receiving the results of the media needs analysis on October 4 2023, then the researchers began to prepare learning materials that would be made in accordance with the findings of the analysis carried out previously, namely requiring 3D animation. The design step is then completed by identifying the components needed in interactive learning media, such as audio, buttons, and interactive quizzes. Apart from that, researchers also collected a number of references that will be applied in creating learning media to attract students' interest in learning.
3. Development (Development) The development stage is carried out to create and test/validate products that have previously been designed at the design stage. At the product validation stage, there were 2 media experts, namely Mr. Zeinor Rahman, M.Pd on January 8 2024 with the results of the need to add scoring/history to the quiz, then continued with Mr. Dr. Adirasa Hadi Prasetyo, M.Pd.I with the results of supporting publishing mp4s on this media. Furthermore, material expert validation was also carried out by Mr. Achmad Fauzi, S.Pd with the results of the learning material being adapted to the class VI independent curriculum book. After the validation test is carried out, the next stage of the product production process is that the concepts and changes that have been developed will then be tested.

4. Implementation The fourth stage, known as implementation, is only carried out for the school selected as the research location. This stage includes 2 steps, namely implementing how to use planetion media with students and seeing students' responses regarding the media that has been created. In the first step, students see the product being made and know how to use it. After that, in the second step, students and teachers fill out the questionnaire that has been given and contains the media assessment instruments that have been created.
5. Evaluation (Evaluation) The fifth stage is the stage of evaluating products that have been tested, the evaluation process is to see whether the learning system meets initial expectations or not. In this stage, researchers provide tests that are useful in evaluating the effectiveness of the product.

This research was carried out at SDN Pangarangan I, Sumenep Regency, with a total of 48 research subjects consisting of 24 experimental class students and 24 control class students.

Data Analysis

Validity data obtained from media expert validators and material experts. Adapted from (Arifin, 2022) with a validity formula, namely:

$$\text{Skor maksimum} = \text{ST x JP x JR}$$

Information:

ST = Highest Score

JP = Number of Questions

JR = Number of Respondents

Then, to calculate the percentage of questionnaire data analysis from experts, use the following formula:

$$P = \frac{\sum X}{\sum Xi} X\ 100\ \%$$

Information:

P = Percentage result of questionnaire data

∑X = Total score obtained

∑Xi = Maximum score

After getting the feasibility percentage value from the experts, the value is then interpreted into the following table categories (Emzir, 2013, p. 119):

No	Skor	Categori
1	81 ≤ P < 100%	Very worthy

2	61 ≤ P < 80%	Worthy
3	41 ≤ P < 60%	Quite decent
4	21 ≤ P < 40%	Not worthy
5	0 ≤ P < 20%	Very inadequate

Practicality data was obtained from teacher response questionnaires and student response questionnaires. This practicality data was adapted from (Arifin, 2022) using the following formula.

No	Skor	Categori
1	81 ≤ P < 100%	Very worthy
2	61 ≤ P < 80%	Worthy
3	41 ≤ P < 60%	Quite decent
4	21 ≤ P < 40%	Not worthy
5	0 ≤ P < 20%	Very inadequate

The effectiveness data in this study was measured by the results of working on posttest questions by class VI students at SDN Pangarangan I Sumenep. This effectiveness data can be calculated using the following formula.

No	Persentase	Categori
1	P > 80%	Very good
2	60 ≤ P < 80%	Good
3	40 ≤ P < 60%	Enough
4	20 ≤ P < 40%	Not Enough
5	P ≤ 20%	Very less

C. Result And Discussion

This development research using the ADDIE model produced a product in the form of planetion media based on Adobe Flash CS 6 software, material on the characteristics of planets in the solar system for class VI students with specifications adjusted for the analysis stage, namely this media uses Adobe Flash CS 6 software for design, has a button feature that easy to use, contains 3D animation, has audio, and can be displayed via laptop and smartphone.

The next stage is product design. Starting with the initial display, the aim is to introduce planetary media based on Adobe Flash CS6 for sixth grade elementary school students, material on the characteristics of planets in the solar system.

Figure 2. *Initial View of Planetation Media*

Then there is the main menu for planetion learning media which is equipped with menu features for learning objectives, materials, quizzes and profiles.

Figure 3. *Planetation Media Main Menu*

The learning objectives menu contains learning objectives and the flow of learning objectives.

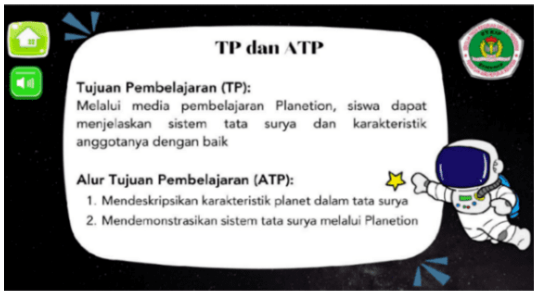


Figure 4. *Planetion Media Material Competency*

Next, the profile menu contains the profile of the planetion media creator, including full name, address, email and telephone number.

Figure 5. *Planetion Media Creator Profile*

In the main menu there is a material menu, where this menu contains an animated visualization of the rotation of the planets around the sun in the solar system.

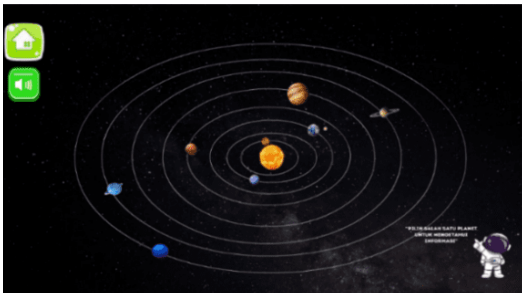


Figure 6. *Visualization of Planetation Media Materials*

Apart from that, when you click on one of the planets, an explanation of the characteristics of that planet will be displayed, for example: when you click on planet Earth, the planet's rotation will stop, then an explanation will be displayed in the form of points regarding the characteristics of that planet Earth.

Figure 7. *Planetion Media Material Contents*

The last section has a quiz menu, this menu can be used when the user has completed the learning process. In this menu, users need to register and log in first, then users can complete several of the available questions. Then, if the user answers incorrectly, a pop-up will display the wrong answer, and vice versa, if it is correct, a pop-up will display the correct answer. Apart from that, there is also a time limit for completing questions.

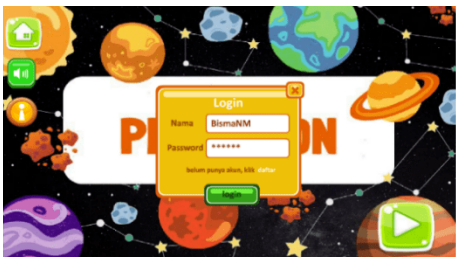
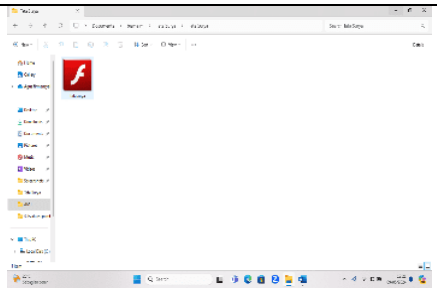
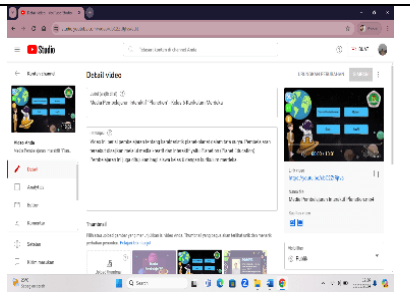


Figure 8. *Questions in the Planetation Media Quiz*

When the user has finished taking the questions, the score the user will get after taking the quiz will appear.

Validation test results obtained from 2 validators, namely media experts and material experts. The assessment results from media expert validation obtained a score of 88%, which is categorized as very feasible. The second stage of material expert validation obtained a score of 97%, which was categorized as very feasible. Apart from that, at the validation stage the media received input that needed additional hint and exit buttons on planetion media, added scoring/history of the quiz game, and added in mp4 format and support publishing on YouTube. The display of planetion media based on Adobe Flash CS 6 software before and after validation is as follows:

Point of revision	Before revision	After Revision
Add hint and exit buttons on planetion media		
Add quiz game scoring/history		

Add it in mp4 format and support publishing on YouTube		

Based on field trials during the implementation of the product developed on teachers and students of class VI SDN Pangarangan I Sumenep, totaling 1 teacher and 24 students, it showed a result of 97% on the teacher response questionnaire and student response questionnaire with a result of 92% in accordance with the practicality category which shows response. very worthy. So, planetion media based on Adobe Flash CS 6 software, material on the characteristics of planets in the solar system for class VI students, is very practical to use.

Referring to the learning outcomes in the experimental and control classes, it shows an increase in the learning outcomes of students who do not use planetion media compared to those who use planetion media. The average pretest score for the experimental class was 61, which was below the KKM set at 75, and the average posttest score for students was 90 and was in the very good category, meanwhile the average pretest result was 60 and posttest 78. This shows that planetion media is more effective in improving student learning outcomes compared to conventional media.

Based on the results of the t-test (independent sample test) using the IBM SPSS Statistics application, with a significance level of 0.05 and a t table of 24 students of 1.714, it shows that the significance value obtained was 0.001 less than the predetermined significance of 0.05 and the results $T_{count} > T_{table}$, namely $T_{count} = 5.886 > T_{table} = 1.714$, so H_0 is rejected and H_1 is accepted. This means that there is a significant difference between learning outcomes that use Adobe Flash CS6-based Planetion learning media and those that do not use the media developed.

	Class	N	Mean	Std. Deviation	Ttest	Std. Error Mean	Sig. (2-tailed)
Skor students	Class_experiment	24	90.33	5.522	5.886	1.127	.001
	Class_control	24	78.50	8.156		1.665	.001

In general, the learning process using the developed Adobe Flash CS6-based Planetion media makes learning more effective, because students can learn independently both at school and outside school according to their level of speed in learning. This is in line with basic education process standards which state that the learning process should be held in an interactive, inspiring, fun, challenging and motivating way for students.

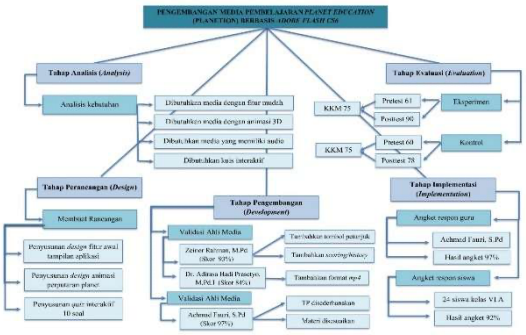


Figure 9. ***Model resulting from discussion***

E. Conclusion

Based on the results of research on the development of planetary media based on Adobe Flash CS 6 software, material on the characteristics of planets in the solar system, which was carried out in class VI at SDN Pangarangan I, this research can be concluded that the average validation score for the media and material was 92.5%, so it was categorized as very worthy. The practicality test by the teacher's response obtained a score of 97% and the student's response obtained a score of 92%, so it was categorized as very feasible. The effectiveness test obtained from the students' posttest results obtained a score of 90 and was said to be very effective. From the research described above, it can be concluded that planetion media based on Adobe Flash CS 6 software is very suitable for use in learning about the characteristics of planets in the solar system for class VI students.

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