



The Development of Learning Media Based on Powtoon in Global Warming Materials for Class XI High School

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ABSTRACT

The learning media developed based on PowToon in global warming material for grade XI students high school. The purpose of this study was to design, analyze the feasibility, and assess the students responses to PowToon based learning media on global warming material. This type of research is a Research and Development (R&D) with the ADDIE model design. The research instrument used was the PowToon media validation assessment sheet which was used by the validator to assess the feasibility of the learning media. Students also filled out a questionnaire to see the responses to the PowToon media developed. The learning media developed after being assessed and given suggestions by the validator are said to be feasible with the valid category. Based on the research results, it was obtained that the average validation of the four media aspects was 86% with the valid category. The average validation of content aspects, design aspects, pedagogical aspects, and ease aspects in media use. As for the results of filling out the student questionnaire, the overall average was 83% with a good category. Where the average questionnaire motivation, learning outcomes, and scientific attitudes. Thus learning media based on PowToon is declared feasible with the valid category used as a learning media.

1. Introduction

Education is one of the main instruments in human resources development because it must have cognitive, affective, and psychomotor abilities so that organizing education requires careful planning and implementation so that the expected results are maximized. The scientific approach used in the learning process in the 2013 curriculum is applied at all levels. Learning with a scientific approach aims so that students can actively construct laws, concepts, or principles through the stages of observing, formulating problems, proposing or formulating

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hypotheses, collecting data with various techniques, analyzing data, drawing conclusions, and communicating concepts, laws, or principles by Permendikbud (2013).

Based on the 2013 Curriculum making educators as facilitators who help students solve learning problems in learning activities. The success of achieving educational goals in school depends a lot on how the learning process is experienced by students as students. Teachers as educators who are directly involved in the implementation of learning are tasked with creating learning conditions that can make students learn optimally to obtain satisfactory learning outcomes by Slameto (2003).

The government in developing education needs continuous changes, especially the curriculum from KTSP to Curriculum 2013. KTSP, which has been replaced by K13, has many shortcomings. In overcoming this, a revision was made to K13, so that K13 changed again to Revised K13, but in fact, there are still many schools that still use K13 and even KTSP (Sari et al., 2017).

Learning media has become a necessity in the learning process. Media is everything that can be used to transmit messages, stimulate thoughts, feelings, attention, and the willingness of students so that students can be encouraged and involved in the learning process (Angkowo et al., 2007). According to by Munir (2013), the term multimedia used in education today provides an overview of a computer system where all media, text, graphics, audio/sound, animation, and video are in one software model that describes or describes an educational program. Learning media can be used as an alternative option for teachers, especially in the field of science to be more innovative and creative by nasir (2018).

Explaining colloidal materials is difficult if not using learning media above two dimensions therefore, it is necessary for the media to visualize the abstract concept of colloidal material both macroscopic and microscopic. Based on the results of this media development research, it can be that interactive learning media using Autoplay Media Studio 8 in colloidal material chemistry subjects deserves to be used as a learning medium by Jannah (2019)

Physics is a part of natural science (IPA) which is taught at the high school to college level, which requires an understanding of concepts. One of the physics subjects studied in class XI IPA SMA is global warming. Based on interviews with teachers in the field of physics at SMA Negeri 12 Pekanbaru, teachers as the main role in the learning process so that students are not independent, this is in contrast to the implementation of the 2013 curriculum using a scientific approach where the teacher's role as a facilitator of students because this approach trains students to be more active and build independent knowledge not the other way around. Generally, global warming materials are abstract which require deep understanding, and require students to focus more on following the learning process. so that the concepts described can be understood by students. Therefore,

for an abstract concept to be understood, a visualization is needed so that it can appear as if it is real.

Efforts that can be made are to develop a learning medium that can attract the attention of students so that it facilitates the thinking process of students to understand the meaning of the material presented and creates students to be independent by Arsyad (2011) states that the complexity of the material presented to students can be simplified with the help of the media. Media is a tool used to send message content, and message recipients, namely students. The use of instructional media is very necessary for the delivery of material because by using the material visualization it can be seen more clearly and interestingly.

One of the programs that can be developed into an interesting learning medium is PowToon media. PowToon is an online service for creating a presentation that has very interesting animation features including handwritten animation, cartoon animation, and lively transition effects, and very easy timeline settings. The PowToon program can load video and flash animation and can be operated more smoothly than other media such as PowerPoint. The feasibility of learning media can be seen from several aspects, namely design aspects, pedagogical aspects, content aspects, ease of use aspects, display aspects, and programming aspects. According to (Rosa et al.,2019) media powtoon to support the flipping classroom strategy can increase student interest.

The results of this study show that learning activities by applying Inductive Teaching Methods through Assessment of student performance in the implementation of the lab can increase based on cycle 1 there is an increase in cycle 2 in the Practical courses of Basic Physics in the Biology Education Study Program PMIPA FKIP UR can improve the attitude of internalization of students by Zulhelmi (2017)

Based on the description that has been stated, the authors researched the title of developing PowToon-based learning media on the subject of atomic structure. The purpose of this research is to design instructional media and reveal the feasibility of media based on PowToon which will be used to teach the concepts of global warming material for grade XI SMA so that in teaching-learning teachers have no difficulty in teaching with this media helping students understand the concept of learning in school. For this reason, what will be achieved in this study is to increase learning outcomes, motivation, and scientific attitudes of student learning.

2. Methodology

This research was conducted at the Teaching and Education Faculty (FKIP) Physics Education Study Program. Time The research was conducted from June 2020 to November 2020.

This type of research is the development of Research and Development (R & D) using ADDIE (Analysis, Design, Development, implementation, Evaluation). This research was conducted up to the Development stage shows as Figure 1.

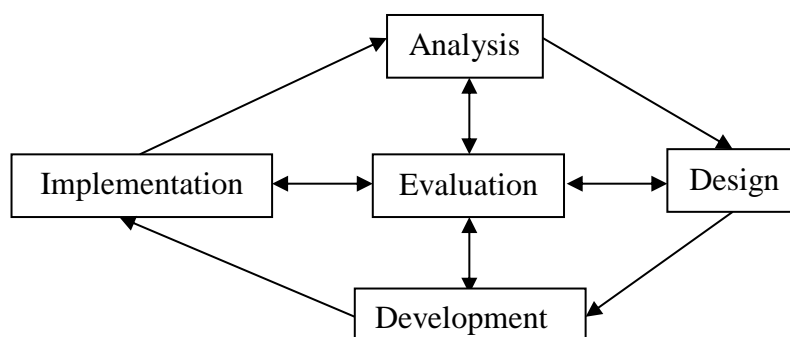


Figure 1. The ADDIE Learning Media Development Model

The data collection technique in this study used a validation sheet instrument, which consisted of validating material experts, media experts, and filling out questionnaires by students. Validation sheets and questionnaires were given to the validator team and students to improve the development of learning media via the google form link.

Data analysis in this study was obtained from the results of the validation of the validator team and the student questionnaire with the equation below.

$$PPV = \frac{\Sigma \text{Validator Answer}}{\Sigma \text{Highest Score of Validator}} \times 100 \%$$

Information :

PPV = Percentage of validator ratings

Σ validator answers = Total number of validator answers

Σ Highest score of validator = total number of highest validator score

By Inesa Wijaya, (2015)

Determining the size of the validator's assessment can be seen in Table 1.

Table 1. Validator Assessment Scale and Student Questionnaire

Percentage	Category
80.00-100	Good / Valid / Eligible
60.00-79.99	Good Enough / Quite Valid / Fair Enough
50.00-59.99	Less Good / Less Valid / Not Feasible
0-49.99	Not Good (Replaced)

Ridwan, (2011)

3. Results and Discussion

In designing this powtoon based learning media based on the ADDIE development model with 5 stages. Stage I is analysis (analyze). In the analysis stage, material analysis and learning media analysis are carried out. The material

analysis activity is in the form of collecting theories related to the subject of global warming. There are two topics on global warming, namely the first meeting on the greenhouse effect and the second meeting on global warming. While learning media analysis, interviews were conducted with physics subject teachers. From the results of the interview, it was found that in the teaching-learning process the teacher was still centered on the teacher's explanation, and after the teacher explained then the students worked on the questions. It is still conventional, what's more, the material on global warming is more abstract, some teachers make reading assignments and papers. Therefore, researchers are interested in making learning media.

Phase II is the design (design), at this stage the overall design of PowToon media on global warming material and the elaboration of the validation sheet instruments and questionnaires.

Stage III is development (Figure 2), at this stage of development, physics learning media using PowToon is produced for the subject of global warming and media validation school by the validator.

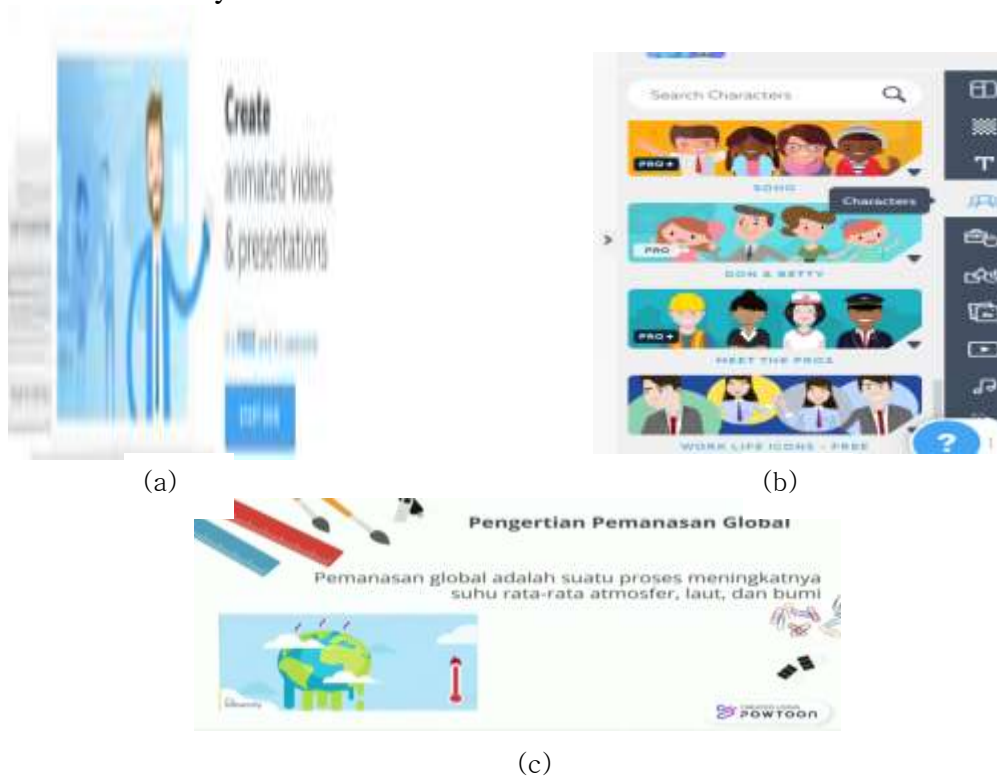


Figure 2. PowToon Media Development (a) PowToon Website (b) Moving Animation (c) Display One of the PowToon Learning Media Global Warming Material

Stage IV is the implementation, at the implementation stage of the powtoon learning media, the global warming material is tested on 20 students of class XI SMA Negeri 12 Pekanbaru and 20 class XI class SMA Negeri 5 Pekanbaru.

Stage V is an evaluation, at the evaluation stage, students fill out a questionnaire consisting of 3 aspects, namely motivation, scientific attitude, and learning outcomes. Students fill out a questionnaire on the google form by clicking the google form URL, not only filling out the questionnaire, but students also providing suggestions and criticism for the Powtoon learning media.

The research data were obtained through the validation results of the validator team consisting of four lecturers and two high school teachers who validated the media by media experts. Meanwhile, the media validation by two lecturers and two teachers. Validators are selected according to the learning media being developed, namely experts in the field of technology science and global warming learning materials. The validation process is carried out twice so that a valid learning media is obtained and the validator decides to give a value to the learning media that has been valid. There are 4 aspects assessed by media experts and material experts. Below is a graph of the percentage of validation results on PowToon media shows as Figure 3.

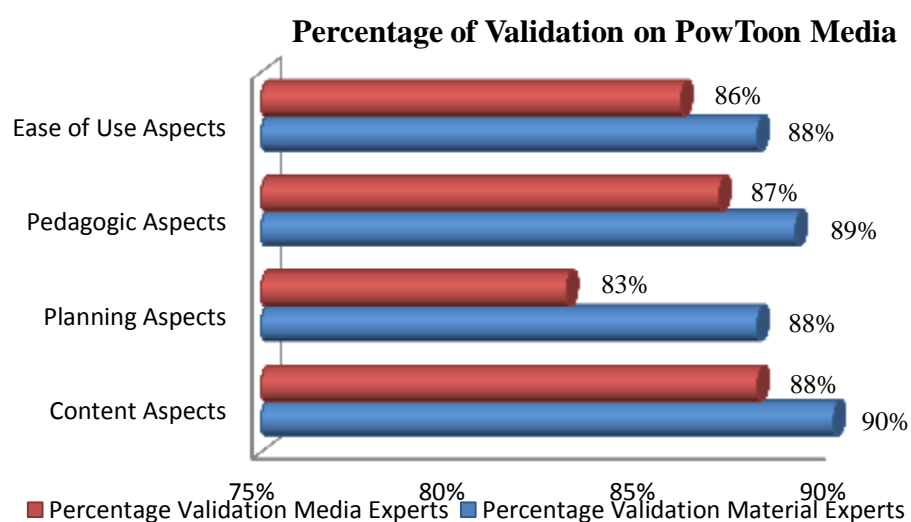


Figure 3. Percentage of Validation on PowToon Media

The results of the recap of the assessment of each aspect obtained the average percentage of assessments from media experts and material experts which can be seen in Table 2.

Table 2. Average Assessment of the Four Aspects of Media Development

No.	Aspect Type	Percentage	Category
1.	Content Aspects	89%	Valid
2.	Planning Aspects	86%	Valid
3.	Pedagogic Aspects	88%	Valid
4.	Ease of Use Aspects	87%	Valid
Percentage Average		88%	Valid

Below is a graph of the percentage of the PowToon learning media development that has been declared valid shows as Figure 4.

Percentage of Learning Media Development for PowToon

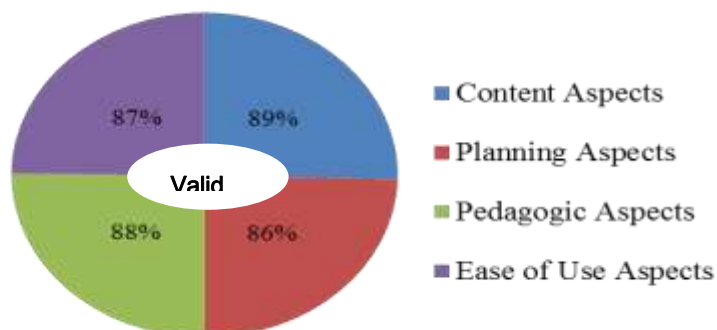


Figure 4. Percentage of Learning Media Development for PowToon

The media developed is then used by students as learning media for global warming material. After students watched the PowToon learning media, students also filled out a questionnaire. The questionnaire consists of three, namely motivation, learning outcomes, and scientific attitudes. The questionnaire was filled out by 20 students of class XI MIPA from SMA Negeri 12 Pekanbaru and 20 students from SMA Negeri 5 Pekanbaru. The results of the recap of filling out the questionnaire for each aspect obtained by the average percentage of the assessment from students can be seen in Table 3.

Table 3. Average Student Questionnaire Results Against PowToon Media

No.	Aspect Type	Percentage	Category
1.	Motivation	85%	Good
2.	Learning outcomes	83%	Good
3.	Scientific Attitude	81%	Good
Percentage Average		83%	Good

The average percentage of questionnaires completed by students can also be seen in Figure 5 below.

Percentage of PowToon Learning Media Questionnaire

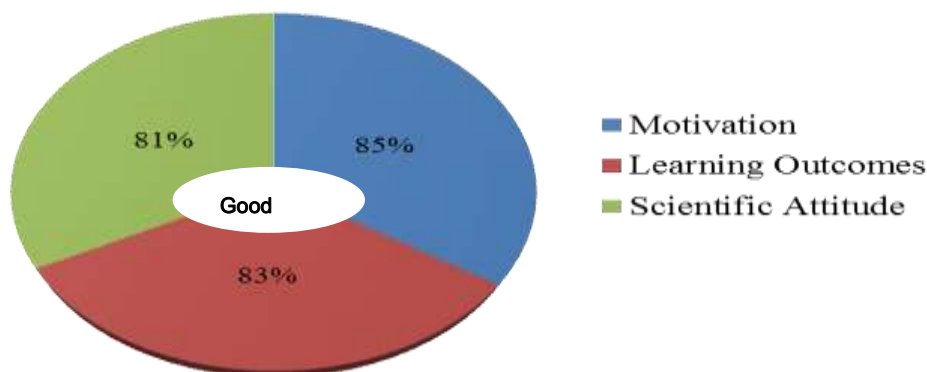


Figure 5. Percentage of PowToon Learning Media Questionnaire

From the graph above, the use of the Powtoon application is good for use in elementary schools *International Journal of Instruction* (Ziden et al., 2013), The Effectiveness of Web-Based Multimedia Applications Simulation in Teaching and Learning "This study focuses on the effectiveness of using virtual multimedia simulations in Islamic Studies in Malaysia, showing that the use of virtual simulations helps students to improve their achievement on a pilgrimage topic.

4. Conclusion

The conclusions in this study are The design of learning media based on the PowToon is based on the ADDIE development model with 5 stages, namely analysis, design, development, implementation, and evaluation. Based on the validator assessment and data analysis that has been done, the PowToon learning media on the subject of global warming is declared feasible with the valid category. And based on filling out questionnaires by students and data analysis that has been done, the students' responses to the PowToon learning media on the subject of global warming are declared good.

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