AIP Conference Proceedings

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Cite as: AIP Conference Proceedings **2659**, 070001 (2022); https://doi.org/10.1063/5.0113540
Published Online: 29 November 2022

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View Online Export Citation


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Learning Media Course Development of Chemistry Learning Program

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Abstract. The objectives of this study are to: (1) develop animation media in P3Kim courses, (2) validate and revise the animation media that has been developed, and (3) conduct individual trials, small group trials, and large group trials. The product developed in this research is the animation media for the P3Kim course. The method used is descriptive-explorative method and will identify various symptoms and root problems that occur in P3Kim course The data analysis technique is calculated using the percentage of feasibility. The results showed that the animation media has a feasibility value of 89.38%. Furthermore, student's responses obtained a score of 82 with a very good criteria. The individual trials were carried out with 3 different category of student and the outcome is 83% in the very good category. Next, The findings of small group trial with 12 students were 87.5% in the very good category. Finally, the outcomes of the large group trial with 25 students is 83% in the very good category. At last, there are as many as 82% of students responded positively to the developed learning media. This research produces animation media that can be used in P3Kim courses to improve student's learning proces.

INTRODUCTION

The P3KIM (Chemistry Learning Program Development) course is one of the compulsory subjects that must be studied by students of the Chemistry education program, FMIPA UNIMED, where the lecturers are members of the group of lecturers in the field of study (KDBK) education. This course is a prerequisite for students to be able to take courses in Microteaching and PPL (Field Practice Programs). For the smooth running of lectures and make it easier for students to understand the material and its demands, learning media is needed.

By using learning media, students will begin to learn by making, analyzing and testing how to make good and correct learning tools.Learning media before being used need to be validated first, both in terms of material content, educational aspects, and technical aspects of media, so that the media when used already meet the requirements as a good learning media. Media validation is intended to protect users from things that cannot be accounted for. This is important to note and do so that what is conveyed to students is correct and good. Likewise, there are still many people who think that the media that has been made can be used immediately. Such conditions are often encountered in daily practice. To be able to find out whether the media that has been produced is good or not, the media needs to be validated, then tested in small groups or one-to-one tests, small group evaluations, and field evaluations, such as expressed by Sugiyono[1]. Therefore, the ultimate goal of this research is to improve the quality of learning through the development of learning media for P3KIM courses

The 8th Annual International Seminar On Trends In Science And Science Education (AISTSSE) 2021
AIP Conf. Proc. 2659, 070001-1–070001-5; https://doi.org/10.1063/5.0113540
Published by AIP Publishing. 978-0-7354-4256-6/$30.00

Learning Media

Learning media is a tool that can help the teaching and learning process so that the meaning according to Adam, et all [2], that learning media is everything both physical and technical in the learning process that can help teachers to make it easier to convey subject matter to students so as to facilitate the achievement of learning objectives has been formulated. The use of teaching media can help achieve successful learning

Learning media is a tool that functions and is used to facilitate the learning process [3]. Furthermore, learning media has an important role in supporting the quality of the teaching and learning process [4]. Media can also make learning more interesting and fun. Learning media is one component of learning that has an important role in teaching activities in schools [5].

The benefits of learning media, first, provide guidelines for teachers to achieve learning objectives so that they can explain learning materials in a systematic order and assist in presenting interesting material to improve the quality of learning, second, can increase students' motivation and interest in learning so that students can think and analyze the subject matter given by the teacher well with a fun learning situation and students can understand the subject matter easily.

With the learning media: the teaching and learning process becomes easy and interesting so that students can understand and understand lessons easily, student learning efficiency can increase because it is in accordance with learning objectives, learning media serves as a learning resource for students to obtain messages and information provided by the teacher so that learning materials can be further improved and form knowledge for students.

Media that can present complete media elements, such as animation, using computers, the internet, is known as multimedia. Multimedia is the use of several media to present information. This combination can contain text, graphics, animation, images, video, and sound. Today's technology allows educators and students to integrate, combine and interact with media far beyond what was previously [6]. Multimedia combines text, sound, images, animations, and videos that are delivered with a computer and can be delivered interactively [7]. This research uses multimedia in the form of macromedia flash.

Learning with macromedia flash is a combination of learning concepts with audiovisual technology that is able to produce new features [8]. One of the advantages of the Flash multimedia program compared to other programs is that it can change animation from one form to another, and create motion animation by following a predetermined path [9].

RESEARCH METHODS

This research is a development research with reference to the steps developed by Borg and Gall [10], namely 1) Conducting preliminary research and gathering information, 2) Planning, 3) Developing the initial product, 4) Conducting initial trials, 5) Revising the main product, 6) Conduct main field test, 7) Revise operational product, 8) Conduct operational field test, 9) Revise final product, 10) Disseminate and implement product.

This research and development resulted in a product in the form of learning media for P3KIM courses, research subjects 1 material expert, 2 media experts and 3 students for the small group test and 12 students for the large group test. The data collection method was a questionnaire. The data analysis technique used is descriptive statistical analysis. The results of the research generally show that the P3KIM course learning media for students which includes aspects of content feasibility, language feasibility aspects, presentation feasibility aspects, and task/evaluation aspects, graphic feasibility aspects are in good category and can be used as learning media for students in P3KIM courses. The media feasibility analysis will be discussed in the research results.

Learning Media Feasibility Analysis

The research instrument used was a media assessment questionnaire based on the BSNP with slight modifications to the material described in the learning media. The indicators used are content feasibility aspects, language feasibility aspects, presentation feasibility aspects and graphic feasibility aspects. With an assessment that includes four levels, namely, Very Good = 4, Good = 3, Less Good = 2, Very Poor = 1. The level of media eligibility, P is calculated by the equation:

$$P = \frac{\text{Score obtained}}{\text{Maximum score}} \text{ x } 100 \quad (1)$$

The percentage that has been obtained is then transformed into qualitative sentences. To determine qualitative criteria (very feasible, feasible, less feasible, and not feasible). The learning media developed can be used if the results obtained from the questionnaire are in the range of 76% - 100% or 51% - 75%, or the criteria are very feasible or feasible.

TABLE 1. Value intervals and classification of media eligibility levels [11]

P Value Intervals	Eligibility Level
76-100%	Very Feasible
51-75%	Feasible
26-50%	Less Feasible
0-25%	Not Feasible

While the media criteria intervals that students responded to followed the following indicators:

TABLE 2. Media Feasibility Sheet [12]

Score %	Assessment Category
0-20	Very unworthy
21-40	Unworthy
41-60	Enough
61-80	Worthy
81-100	Worthy

RESEARCH RESULTS AND DISCUSSION

The development of learning media, which includes setting learning purpose for students in the cognitive, affective and psychomotor domains and the ultimate goal is effective in supporting the learning process of P3KIM courses. The next development is to make flash-based multimedia learning media that is in accordance with predetermined learning objectives. This step aims to identify what materials and content will be displayed and studied in the learning media that will be developed. The results of this stage are making content design and designing the design stage. The design stage contains the design of learning media starting from the draft media used to obtain an overview of the content of the material, and the form of display (layout) and what will be displayed on the media. learning to be made. The results of this stage generally contain the P3KIM lecture material and the menus in it. Validation can be done through the assessment of experts or experts who are experienced in their fields. This validation is done before the media is tested on students [13]. In brief, the research results obtained can be described as follows:

The Results of Validation of Learning Media Developed by Media Experts

The results of the validation of the learning media developed by media experts using the BSNP instrument in the form of a questionnaire can be seen in the table below:

TABLE 3. Media validation results by media experts

Assessment Component	Evaluator		Average
	Expert 1	Expert 2	
Content Eligibility	92.5%	92.5%	92.5 %
Serving Eligibility	86.0%	85.0%	85.5%
Language Eligibility	95.0%	95.0%	95.0 %
Graphic Eligibility	85.0%	85.0 %	85.0 %
Average	89.5%	89.38%	89.38 %

From the Table 3, it can be seen the results of the validation of the development of P3KIM learning media developed by researchers. The assessment includes aspects of content feasibility, presentation feasibility, language feasibility and graphic feasibility. The average validation analysis of the media that has been developed is 89%,

which means the media is valid and does not need to be revised with an average elaboration of the content feasibility aspect of 92.5%; the aspect of presentation feasibility is 85.5%; the aspect of language feasibility is 95.0%; and the feasibility aspect of the graphic is 85%. So it can be concluded that the development of P3KIM course media is feasible to use in P3KIM lectures. There have been many studies that have developed such learning media, including; previous research obtained an average score of 94.33 media development with very valid criteria. That is, the learning media developed is very suitable for use in learning. Another study found that the use of Macromedia flash in teaching chemistry increased student learning outcomes by 10.82%.

One to One Evaluation

Individual tests were conducted on three students who had taken P3KIM courses in the chemistry education study program. The three students have different abilities. One student with high ability, one student with moderate ability, and one student with low ability. In general, the three students stated that they were good in almost all variables, only in terms of interaction and color composition they were still considered not good, but the cover design and text readability were very good, as well as the clarity of feedback was very good.

Based on the results of the individual student test (one to one evaluation) on the development of P3KIM course material media, it can be concluded that the development of P3KIM learning media is in very good criteria with a percentage of 83%. Thus the development of P3KIM course media has been categorized as good and can be used.

Small Group Trying out

Then the developer gave teaching materials and questionnaires to 12 students as small group trials. The results of the questionnaire, which is a student assessment of the development of P3KIM course media, indicate that the P3KIM course media are in very GOOD criteria, with a percentage of 87.5%. Thus the P3KIM course media that has been developed can be used for field testing in P3KIM course learning in educational study programs chemistry FMIPA Universitas Negeri Medan.

Results of Large Group Test

Large group test were given to 25 students and the results obtained were 83% with very good criteria, so the developed media could be used for field testing in P3KIM lectures.

Results of the Student Response Questionnaire

From the results of student response questionnaires distributed to students who took P3KIM lectures in the Chemistry Education study program, as many as 25 students. it can be seen positive and negative responses to the developed learning media. Positive responses are known from student statements, stating that they are happy, new and interested in the components of the learning media. While the negative response is a student statement stating that they are not happy, not new and not interested in the learning media developed. The results of data analysis showed that student responses to all aspects of the developed learning media, responded positively above 80%, namely an average of 82% by college students. This shows that the developed learning media has not been revised based on college student responses and can already be used in P3KIM lectures.

CONCLUSION

Based on the process of developing P3KIM learning media, it has met the eligibility of BNSP because the media developed has a very feasible category based on the assessment of the validator and is also proven by the positive response of students who reach more than 80% giving a positive response to the development of P3KIM course media.

ACKNOWLEDGMENTS

This work is supported by skim TERAPAN 2021 from Universitas Negeri Medan, Indonesia

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