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Media analysis in the development of e-module based guidance inquiry integrated with ethnoscience in learning physics at senior high school

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Abstract. Today's technology is developing very rapidly, marked by many latest sophisticated inventions in various fields, including in the educations sector. The application of technology in the education field is found by electronic-based learning media such as the E-module. However, the existing E-module has been not able to guide a student to find physics concepts and according to the needs and conditions of students. So, it's necessary to develop a guided inquiry-based e-module integrated ethnoscience that fits with the needs and conditions of students. This research is descriptive qualitative research. The result of media analysis, guided inquiry-based E-module are needed that suitable the needs and conditions of students.

1. Introduction

The curriculum used today, there is a demand that students do independent and scientific learning, to support this it needs learning media that can make students independent and scientific as well. learning media is a component of the learning environment in the form of communication which can be in the form of a message, information or learning material that can make students learn [1]. Learning activities in the curriculum will be maximized if they utilize the role of information and communication technology to improve efficiency and effectiveness in the learning process [2]. One of the learning media that uses technology development is an electronic module. An electronic module is a form of presentation of independent learning media that are arranged systematically into the smallest learning unit to achieve learning objectives presented in an electronic format that contains animation, audio, and navigation that makes learning more interactive by using programs [3].

Electronic media that can be accessed by students has benefits and characters that vary depending on its use. Electronic media can make the learning process more interesting, interactive, can be done anytime and anywhere and can improve the quality of learning [4]. Based on the above statement it can be concluded that the electronic module is a systematically arranged media presented in an electronic format that can make it more interesting, interactive, and can support the students' independent learning process. Good media must contain learning material can guide students to find concepts from the material being studied. Inquiry learning can develop self-confidence and increase the ability to think of looking for alternative answers with various problems to improve students' understanding of concepts and creativity [5]. Based on the statement above, it can be interpreted that the use of instructional media



that is integrated with the guided inquiry model will be able to guide students to improve students' understanding of concepts and creativity.

Supporting the improvement of students' understanding of concepts can not only be done by using an integrated media guided inquiry model but can also use media that use approaches that are appropriate to the socio-cultural environmental conditions of students. The recommended scientific approach in education in Indonesia today is ethnosience, which is original knowledge in the form of language, customs and culture, morals, and also technology created by certain people or people that contain scientific knowledge [6]. Based on these reasons the researcher wants to develop media in the form of e-physics modules based on guided inquiry learning models and is integrated with ethnosience.

2. Research Method

The type of research is a descriptive study using a qualitative approach. Descriptive research is conducted to describe, interpret and explain how a variable or state of data in research [7]. The instrument used to collect data was in the form of a media analysis questionnaire, which was filled out by 31 students of SMAN 1 Pasaman. The steps used in analyzing data from the questionnaire are giving a score for each item, adding up the scores for each indicator, and finding the average scores from all aspects. The determination of the level of competence in this study is as follows.

Table 1. Descriptive Analysis of Observations

No.	Category	Value
1	Very good	$90 < N \leq 100$
2	Good	$75 < N \leq 90$
3	Less	$60 < N \leq 75$
4	Very less	≤ 60

Source: Kemendikbud (2013: 314) [8]

3. Results and Discussion.

Following graph 1 regarding the presentation of the value of the questions asked to students which include several aspects also including aspects of knowledge, skills, initial abilities, learning styles, learning media, end motivation.

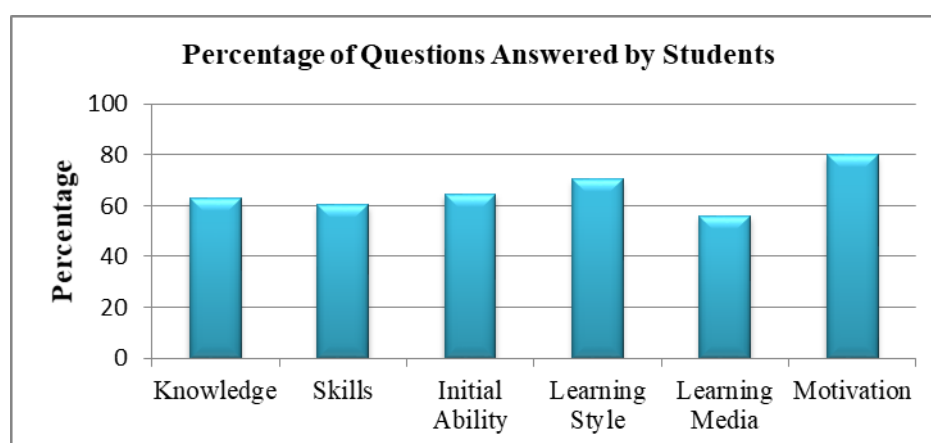


Figure 1. Percentage of the value of questions answered by students

The graph shows the highest percentage is the aspect of student motivation in learning. The percentage with the lowest aspect is the learning media used by students in the learning process.

The analysis submitted to students contained six aspects consisting of several indicators in each aspect. The following is table 2 percentage value of the six aspects presented to students.

Table 2. Percentage analysis of the six aspects that are tested

No	Aspek	Persentase	Kategori
1	Knowledge	63	Less
2	Skills	60.3	Less
3	Initial ability	64.6	Less
4	Learning style	70.4	Less
5	Learning media	56	Very less
6	Motivation	80	Good

The table above shows that from the six aspects tested on learners an average percentage score of 66% was obtained with the less category. The highest percentage aspect is the motivation of students in implementing the learning process. The lowest percentage aspect is the learning media used by students.

Aspects of learning media consisting of several indicators presented to students such as table 3:

Table 3. Indicators of learning media

No	Indicators	Average value (%)
1	Using modules in learning	77
2	Use modules that support independent learning	53
3	Difficult to analyze the problem in the module	52
4	Difficult to understand the concepts in the module	52
5	The module has not yet guided the discovery of concepts	52
5	The module does not utilize technology yet	52
7	Never used e-module	52

Based on table 3 seven indicators showed only one high value and 6 other low indicators. so aspects of the learning media used by students in schools are still very low. Factors that cause the quality of learning are very low because of one of them because of the media used in learning. Benefits of the use of instructional media will attract more attention of students, learning is more meaningful, methods in learning vary, and students are more active [9]. Media in the form of modules that are used by students in learning have not been able to guide students to analyze and find concepts from the learning material. We need modules that can guide students in finding concepts such as the application of a learning model in the module. The modules used by students in learning are not yet technology based. One of the technology-based learning media can be in the form of e-modules. E-modules are very good to be used as learning media and can increase students' knowledge competency [10]. Using e-modules based on a model that can guide students in finding their own concept of learning material gives a very good impact to improve students' knowledge competence. Technology-based learning will be more effective if the learning activities used are centered on students by developing problem solving abilities in real life so that education is relevant and responsive to the demands of real life, creating reflective thinking, and fostering the development and involvement of students in the learning process [11]. This is relevant to ethnoscience integrated learning that emphasizes science in everyday life.

4. Conclusion

The results of media analysis have been carried out using a questionnaire on students. The analysis was conducted at SMA N 1 Pasaman, it can be concluded that the development of an integrated inquiry-based e-module integrated ethnoscience is needed in schools. The development of learning media includes the development of integrated e-modules on ethnics that is appropriate to the needs and conditions of learners and by the demands of the curriculum.

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