Analysis of interactive media integrated natural science by the motion themes in life using integrated connected type 21st century learning

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Abstract. Interactive Media could make effective learning, efficient learning, and easy understanding for the students. We need the interactive media development for integrated natural science that reflects the expected capabilities to face the challenges of the 21st century. The study is aimed to analyze the interactive media development for integrated natural science by a motion theme in life using integrated learning connected type in the 21st century. A preliminary study conducted a curriculum analysis to know the requirement of developing interactive media. The result is there are still shortcomings using that media to support the students in the learning process. We have a conclusion that analysis of the interactive media development for integrated natural science by the motion themes in life using integrated connected type in the 21st century learning is so required to support the students to learn and to spur learners to have 21st century skills.

1. Introduction

Education is the main foundation in our life because that process could increase the knowledge of human being so it is going to produce the quality human resources to face the challenge of the 21st century. On the globalization era, the educational role is so required to increase the quality human resources in order to compete with another country and for Indonesia better similarly with the national education goals that are to develop the student abilities [1].

The 21st century learning is learning that integrates the literature ability, knowledge skill, proficiency and attitude, and technology literacy. The learning process of the 21st century starts from the easy (LOTS) to the hard (HOTS) in order to produce the students who have a character and skills [2]. One of the learning has a big impact to face the challenge of the 21st century is natural science. It is the study of all-natural phenomena that exist in the universe and its symptoms which are studied systematically and using an empiric method. In the natural science major, the students are not only learning about the fact, principles, and concept but also conduct research. That major could practice the students to solve a problem and to think critically.

In the curriculum 2013, the major of natural science is studied integrated by combining the physic materials, chemistry materials, and biology materials. The integrated natural science hoped could help the students to face the challenge of the 21st century, both an attitude competence, knowledge, and skills. In another way, it could help the student to know themselves and nature and to implement in their life.
The learning process is implemented by using the model of integrated natural science with the connected type. In that major, the learning process is conducted by connecting several materials, concepts, and skills related. The learning process in the 2013 curriculum for junior high schools is conducted by implementing the scientific approach. It is a learning process that is structured in such a way that students actively develop concept, principle, and law through observation, formulation of the problem, make a hypothesis based on the observation, data collection, analyze data, made a conclusion and discussion about the result [3]. There is the step of a scientific approach called (1) to find the information through the observation, (2) made several questions about a topic, (3) to collect data and to conduct an experience, (4) to associate (5) to discuss a topic [4].

Competence is an ability that must be possessed by students. There is 3 aspect of competence called an attitude competency, knowledge competency, and skills competency. The competence of students is the abilities that must reach and have to the students at the end of the learning. To increase the student's competency achievement, the teacher should use the teaching materials. One of them is interactive media.

The instructional media is the things that could be used as the tools to deliver the message to the students. It created a good for the learning environment and an effective and efficient learning process so it could attract the students' interest [6]. It could motivate students to learn as well [7]. In order to the media could be used optimally, the interactive media need to be developed. Through that media could make the students more interested in natural science with the motion theme in life by using the connected type.

The integrated natural science of a connected type is the learning process conducted with connecting several materials, concepts and skills relating in the natural science. It has several advantages that are the students get the overall description concept in a major with connecting a concept and there's no significant impact on the application of the current curriculum. So, the integrated natural science of a connected type is too suitable used to the students of junior high school [8].

According to Ploomp model to make the valid, practical and effective instructional media need conducted the preliminary research. The first steps we can do the needs analysis and student analysis. The results of the analysis conducted are, the first, educator-centered learning which causes a lack of student participation in learning so that students only accept what is conveyed by educators, where students are more inclined to memorize the subject matter than to understand it; Second, the lack of interest and motivation of students in learning science occurs because they feel that science learning is difficult to understand so students become less active in learning; Third, the lack of media use in the learning process so that students become bored and science learning becomes difficult to understand. For this reason, researchers need to develop interactive science media integrated with the theme of motion in life using an integrated type of connected learning 21st century.

2. Method
The research design uses a descriptive survey and uses the quantitative to collect data (9). The research population is the student class VIII, SMP 11 Padang. Data collection is the questioner shared to the students and teachers. The analysis data uses the descriptive statistic. The media analysis uses the likert scale. Table 1.

| Interval (%) | Category         |
|-------------|------------------|
| ≤60         | Very less        |
| 60 - 76     | Less             |
| 75 - 91     | Good             |
| 90 - 101    | Very good        |

3. Results and Discussion
From the preliminary research, we got the result using the instrument research as this following:
3.1 Analysis Standards Of Graduate Competency

The student competency standard is the criteria about the student ability qualifications that is an attitude, knowledge, and skill that must be had by the students [10]. The following image 1 is the analysis standards of graduate competency.

![Image 1](https://example.com/image1.png)

**Figure 1.** Analysis Standards Of Graduate Competency

From that image, we could see that the attitude competence percentage is higher than the knowledge, and skill competence percentage. So, we could deduce that the learning process is pushed to reach attitude competence, as a result, the students' knowledge and skill competence is too low.

3.2 Student Analysis

Students analysis conducted in the interest analysis, motivation analysis, analysis of learning style, attitude, knowledge, and skill. The following image is the student analysis:

![Image 2](https://example.com/image2.png)

**Figure 2.** Student Analysis

From that image 2, we saw that the student analysis percentage is around 63-68 % (lack category). Based on that result the knowledge has a low value rather than all of the categories. It’s because the instructional media is not made the students understand with the learning materials. That material is too general, non-specific, where in the explanation of the major is still separated among biology, chemistry, and physics major and the learning method is still using the monologue method where a teacher gives the learning materials by giving a speech in front the class.

3.3 Analysis Of The Instructional Media

The instructional media could make a learning process more interactive and make the student more motivated to learn. That following image is an analysis of the instructional media:
From that image, we could see the percentage of analysis result is 60-75 % (lack category). Hence we need a media that have the right content quality, learning, and technique, so it made the student easy to understand the learning materials.

4. Conclusion
Based on all of the analysis results that are the analysis of student competency standard, Students analysis, the analysis of instructional media is showing that learning process in the schools has not implemented better. Hence, we need the instructional media to increase the learning process and finally, we could actualize the national education goals in order to motivate the students to have a skill in the 21st century.

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