Book Development Based on Riau traditional Cultural With the Approach of Physics Concepts

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Abstract: The purpose of this study is to test the validity of Book based on Riau traditional cultural with the approach of Physics Concepts. The method of this research is Research and Development. It was conducted in the physics laboratory in physics education program at the university of Riau. Three physics educators to validate this book. The data is analyzed by a descriptive analysis to categorize the average score of the validity of Book based on Riau traditional cultural with the approach of Physics Concepts. Based on the analysis of research data, it is obtained an average score with high category, for all aspects that are rated at sub content , that is Traditional Cane Sugar Production, canoe runway, simple machine, Working Principles Of Traditional Hunting Tools, Physics Principles on Traditional rice process, Phycics concept in Traditional Music Tolls, Physics Concept in Tradisional Games and Phycics concept in Traditional Music Tolls (hit and blow up). It suggests Book based on Riau Traditional cultural with the approach of Physics Concepts valid so that it can be used as a reference for physics lessons

Keywords:*validity,Book , Traditional Culture*

1. Introduction

Physics is part of science which studies how to find out about nature systematically so that science is not just amastery of a collection of knowledge in the form of facts, concepts, or principle but also a process of discovery. Therefore, science education should emphasize on the provision of direct experience to develop the competencies in order the students are able to explore and understand the universe scientifically. Science education is directed to "find out" and "act" in order to be able to help students gain a deeper understanding of the nature around (Permendiknas, 2006)

As has been known that physics is one of the subjects which is less desirable (Mayub. A, 2005). One of thereasons is that physicshas many abstract concepts that are so hard to imagine. Therefore, many students directly worked on physics formulas without trying to learn the background of the underlying philosophy. If only the abstract concepts can be made into reality which can easily be captured by the senses, then the problem will be very different. With this notion, it is learning media is critically needed (Suarman et al, 2018).

Students'misconceptions which are *real* and *constant*could interfere with the formation of a scientific conception. According to Luchembe et al (2014), precise understanding *of* a concept

understood by the learners is very important to learnother scientific concepts. Learning which that does not address the misconceptions can cause difficulties in learning and will eventually *lead* to low *learning outcomes.* According to Ephias & Tawanda (2014), misunderstanding of students toward scientific conceptsindicates *that*this misunderstanding has *am*features such as students are often highly resistant to traditional*learning.* The traditional learning which considers that the knowledge can be transferred fully*from*teacher's mind *to* students' mind needs to be changed to constructivism view thatconsiders the knowledge is *built* within students (Kablan & Rich, 2014).

Physics education researchers have indicated that the students possess some difficulties and misconceptions on physics concepts in mechanic, one of them is Force material (Semih, 2015). The other discussion about the students' understanding of physics concepts illustrates that many students have misconceptions in various concepts that become the basis of the deep knowledge about physics; currently, it is widely recognized that students' misconceptions about physics hamper their understanding (Chee, 2010;Simanek, 2008). The same misconceptions happen, starting from low level to the level of the university. This indicates that conventional or traditionalteaching and learning process can not resolve the misconceptions if the focus of teaching is not targeted on the misconceptions themselves (Erol et al, 2015).

Learning media is very helpful in the learning physics process by enlightening learning materials that are taught (Yuliandari, 2012; Sukarno & Sutarman, 2014). Anita (2009) stated that "There are many kinds of learning media but none of them are better than the others. Every media has its advantage and disadvantage." Teachers can choose and use the medias that are compatible with the basic competencies, students' characteristics, and the materials that would be delivered. The success in using learning media that is stated by Sutjiono in an education journal is as follow: The success in using media in learningprocess to increase learning outcomes depends on (1) the contents, (2) the delivery of the contents, and (3) the characteristics of the recipients. It does not mean that the more sophisticated the media being utilized, the better the learning outcomes, or vice versa. Simple learning medias are more effective and more efficient if they are organized well as well as presented to the right students. Arsyad (2007) suggested that the learning medias are the assisted tools in the learning process either in the classrooms or out of the classrooms in the purpose of teacher-students communication in the learning process.

Learning media is a tool that is used to convey the learning content. Learning is a communication process between students, teachers, and learning materials. The communication will not work without being helped by conveying device or media (Rusman, 2012). Ashyar (2012) mentioned that: 1. Learning medias can give right information, 2. Learning media can add materials' attractiveness so that they can increase the motivation and the tendency so that it can attract the students to focus on attending the materials being delivered, 3. The media can stimulate the students to think critically, use their imagination, and have a visionary attitude so that they can produce creative and innovative works. Sitanggang (2013) asserted that medias or props are some parts of learning media that are defined as all objects (It can be in the form of animate or inanimate objects) as an intermediary that is used in learning process.

One of the contextual learning medias is culture-based learning which isthe strategy of learning environmental creation and the design of learning experiences which integrate the culture as a part of learning process (Dirjen Dikti, 2004). Culture-based learning is based on the acknowledgment of culture as a fundamental part of knowledge, expression, the communication of ideas, as well as the development of knowledge. The learning which

integrates local cultures in the learning process will increase not only students' learning outcomes but also increase the appreciation of traditional or local cultures (Morales, 2014; Malaluan & Masangcay, 2015)

Johnson (2012) explains that the contextual approach is the approach that enables learners to connect the content of academic subjects with their daily lives contexts in search of the meanings. As a learning approach, contextual approach has seven components that should be built by the teachers, they are (1) constructivism, (2) inquiry, (3) questioning, (4) learning community, (5) modelling, (6) reflection, and (7) authentic assessment (Rusman, 2012).

Istiqomah, Lailatul (2009) conveyed that contextual learning is a learning concept that helps teacher link between learning materials with students' real life, as well as encourage the students to draw connections between the knowledge they gain with the applications in their daily lives. The context-based approach is aimed at developing and preserving the admiration and curiosity about the universe (Eser & Neslihan, 2014). At the same time, the context can help learners adjoin the scientific knowledge with real life (Laguador, 2014). The learners need to analyze the meaning by using its context in order to verify "need-to-know" content approach (Yigit, 2010). Therefore, the students' interest and the positive attitude toward physics are improved (Eser ÜLTAY, 2014; Ridzuan et al., 2018).

Culture-based learning is the strategy of learning environment creation strategy and the design of learning experience that are integrated with the culture as a part of thelearning process (Director General of Higher Education, 2004). Culture-based learning is based on the acknowledgment toward cultures as a fundamental part of education, the expression and the communication of an idea, and science development.

Learning through cultures is a strategy that gives the students opportunities to show their understanding achievement or the meaning they created in a subject through various culture realizations. Learning through cultures is one of themultiple representations of learning (Dirjen Dikti, 2004), or the form of understanding assessment in many forms. Learning through cultures includes the utilizations of various cultural realizations. According to Adhitama et al (2015), in learning by culture, the culture and its manifestations are the learning medias in the learning process. It also becomes the context of the examples of concepts and principles of a subject, as well as becoming contexts of principle applications or procedure in a subject. It is obvious that learning through culture as media manifestations isimpressive to make the students understand their subjects (Jasni dan Zulikha, 2013).

2. Methodology

This research was conducted at the Laboratory of Physical Education major of PMIPA FKIP of Riau University, in the Academic Year of 2017/2018. It was conducted from July until November 2018.

The type of research is the development of R & D (Research & Development). R & D Research is used to produce certain products or enhance existing ones (Sugiyono, 2014). Based on the development of R & D (Research & Development), the researchers perform procedures as the follow:

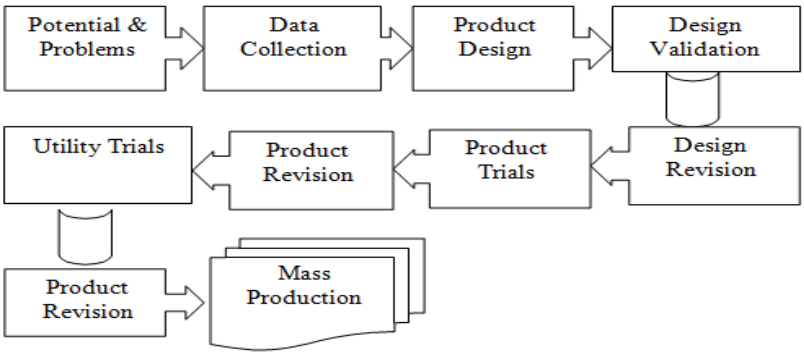

Figure 1. Research Procedure Flow Chart

The object of the research on Book Development based on Riau traditional cultural with the approach of Physics Concepts with sub topics Traditional Cane Sugar Production, canoe runway, simple machine, Working Principles Of Traditional Hunting Tools, Physics Principles on Traditional rice process, Phycics concept in Traditional Music Tolls, Physics Concept in Tradisional Games and Phycics concept in Traditional Music Tolls (hit and blow up). Book cover as in figure 2.

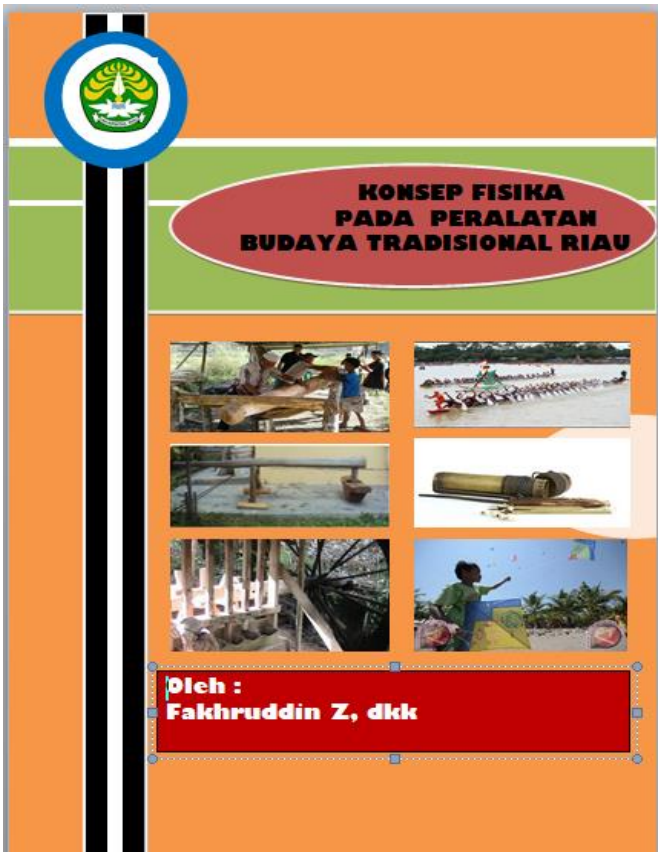

Figure 2. cover book physics concept on riau traditional culture equipment

The research instruments developed in this study is in the form of validation questionnaire of Student Worksheet instrument using Likert scale. This instrument is an instrument of data collection that includes:

The validity of a research instrument is the degree showing which test measures what it intends to be measured; a measured test is valid, not universal. The technique of data collection is by using primary sources of three education expert

Data Analysis Techniques

The data analysis technique that is used in this research is a descriptive analysis technique. Descriptive analysis of the data to the variables of a research covers the depiction of the results of research in the form of *mean*, standard deviation, and the distance between the lowest and highest numbers (Creswell, 2010).

The data analysis of validity and practicality results use the steps as follow:

1. Summing up each questionnaire indicator of validity

The questionnaire assessment category by validators uses the guidance as in Table 1.

Table 1. Questionnaire Assessment Category

No	Category	Score
1	Very Agree	4
2	Agree	3
3	Less Agree	2
4	Do not Agree	1

(Sugiono,2014)

2. Searching the average of each indicator of validation questionnaire.
3. Searching the average of the whole validation questionnaire.
4. Determining the indicator average category based on the table by using Likert scale.

Table 2. The Category of Validity

No	Category	Average Score Range
1	Very High (VH)	$3{,}25 \leq \bar{x} < 4{,}0$
2	High (H)	$2{,}50 \leq \bar{x} < 3{,}25$
3	Low (L)	$1{,}75 \leq \bar{x} < 2{,}50$
4	Very Low (VL)	$1{,}00 \leq \bar{x} < 1{,}75$

To determine the average per-indicator, the formula is used:

$$\text{The average per-indicator} = \frac{\text{The Score per-indicator}}{\text{Total Validator}}$$

3. Result and Discussions

From the research results are obtained as in table 3, table 4 and table 5 as follows:

Table 3. The Validity of Content Validity

No	Content	chapter							
		A	B	C	D	E	F	G	H
1	Category	H	H	H	H	H	H	H	H

Table 4. The Validity of Content language

No	language	chapter							
		A	B	C	D	E	F	G	H
1	Category	VH	VH	H	H	H	H	H	H

Table 5. The Validity of Graphic feasibility

No	Graphic feasibility	chapter							
		A	B	C	D	E	F	G	H
	Category	VH	VH	H	H	H	H	H	H

Information

A. Traditional Cane Sugar Production
B. canoe runway
C. Simple machine
D. Working Principles Of Traditional Hunting Tools
E. Physics Principles on Traditional rice process
F. Phycics concept in Traditional Music Tolls
G. Physics Concept in Tradisional Games
H. Phycics concept in Traditional Music Tolls (hit and blow up).

Based on the results of the study, the book based on the traditional culture of Riau with the approach of the Physics Concept was stated as valid. From table 3, it is found that eight chapters from the aspect of book content are in the high category. From table 4, it is found that 7 chapters from 8 chapters in the aspect of language are in the high category, while chapter 2 is in the very high category. that 6 chapters from 8 chapters in the aspect of language are in the high category, while chapters 1 and 2 are in the very high category

Learning medias before being used should be valid. This is based on the notion of Sugiono (2014). The validity is aimed at measuring the precision of the instruments, which means that the media being used should be able to rate what is rated precisely and right.

There are several suggestions from the validator in improving this module, they are:

a. from the aspect of the contents of the book, the physics concepts contained in cultural equipment are detailed so that the reader can better understand the relationship between the concept of physics and the traditional cultural tools of Riau.

b. from the aspect of the language of the book, using standard Indonesian, which is Indonesian language that has been refined (EYD)
c. from the aspect of the Graphic feasibility of the book, do not use excessive letter combinations / use many types of letters, the displayed image must be more contrasted, so the reader understands the displayed image

4. Conclusion

Based on the data collected and analyzed in the research that has been explained, it can be concluded that the book of physics concepts in the traditional cultural equipment riau is declared valid. This is based on the level of the book category, on the aspect of the book content in the high category, the aspect of language in the high category and very high while in the Graphic feasibility aspect which is in the high and very high category, so that the physics concept book on the traditional cultural equipment Riau that has been tested for validity can be used as a reference for learning in schools, especially learning based contextual

Recommendation

Based on the conclusions, the authors recommend that teachers use contextual learning based on local cultural equipment so that students more quickly understand the lessons they are learning. As for researchers who are interested in doing similar research, you should examine the local culture related to the physical concepts being studied.

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