Availability of learning resources for enrichment learning at senior high school in West Sumatra

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Abstract. The ongoing learning process consists of planning, implementation, assessment and evaluation, reflection, feedback, and further revision or new planning. The results of the evaluation of competency achievement by students determine the feedback action and the next plan that will be carried out by the teacher. Based on the results of the evaluation, students are divided into two groups, namely groups that have achieved competence and groups that have not yet achieved it. The first group needs enrichment learning while the second group needs a remedial program. A survey of 24 Senior High Schools in West Sumatera was conducted to obtain information about the implementation of enrichment learning. The data collection instrument used is questionnaire and observation sheet. Information is obtained that teachers rarely carry out enrichment learning, because when children are in school it is fully filled with regular learning activities and teaching materials used by teachers only textbooks, which are only used up for regular learning activities. Referring to the information obtained, it can be said that Senior High School physics learning requires teaching materials that facilitate students learning outside the classroom. These teaching materials should facilitate students to learn without a teacher. So that teaching materials attract students’ interest must be packaged in such a way, for example ICT-based. One learning resource that meets these needs is a contextual-based physics module. To be practical and make it easier for students to adjust the place and time of each, then the most appropriate is the e-module physics. Based on observations made, there are no physical e-modules in the school observed. Referring to the problems that have been obtained, it can be concluded that to help teachers solve problems, contextual physics based e-modules need to be developed.

1. Introduction
Physics can be defined as the science that deals with matter, energy, motion and force. It studies the fundamental building blocks of the universe and how they interact. Physics is essential for understanding the modern world, and is a definite part of its culture, [1]. Modern physics - as the systematic study of nature based on observation, experimentation, reason and mathematical analysis - had its beginnings in the 1600’s with the work of Galileo Galilei and Isaac Newton, [2]. Physics as part of science is essentially 1) a body of knowledge, 2) a way of thinking, 3) a way of investigating, 4) and its interaction with technology and society, [3]. So physics is not a collection of mere knowledge, let alone a collection of mathematical formulas that are boring, unattractive, and moreover useless.

Learning is the teacher's activities programmed in instructional design, to make students learn actively that emphasizes the provision of learning resources, [4]. In accordance with the nature of
physics as a basic science, learning physics should take place such as observation or experimentation activities and utilize mathematics as tools that facilitate learning physics itself. Because the objects studied in physics are various events in nature, learning physics means studying various events in the natural environment, or learning from context.

Context gives meaning, relevance and full benefits to learning. Contextual Teaching and Learning (CTL) is learning that connects concepts in learning with real life, [5]. Contextual Teaching and Learning (CTL) is an educational process that aims to help students see the meaning in academic material that they learn by connecting academic subjects they learn with the context in their daily lives[6]. Contextual learning is a coordination between subject materials (contents) and intellectual skills that should be possessed by the students in a condition or situation which is suitable with the students' cognitive psychology and environmental needs, [7]. To learn physics based on the context of daily events, resources or teaching materials are needed, which have the ability to guide students to study or analyze various contexts related to the subject matter. More than that the actual learning needs that must be met by teachers today are critical thinking, creative thinking, collaboration, communication (4C) and IT literation.

The millenium is known as the age of technology, requiring teachers to have teaching skills, including utilizing technology in learning. Utilization of information technology in presenting teaching materials, provides opportunities for students to learn where and whenever they want to learn. Specifically for enrichment activities required teaching materials that allow students to learn without the help of teachers, both at school and outside of school. To meet the demands of Millenial century learning skills in enrichment activities, one choice of appropriate teaching materials is e-modules. It is important to know whether teaching materials used by physics teachers in West Sumatra have met the need for enrichment learning in the 21st century or not.

Modules are a kind of planned learning unit unity, designed to help individual students achieve their learning goals, [8], a module is a complete unit consisting of a series of learning activities arranged to help students achieve their stated goals formulated. With the e-module the learning process will involve the appearance of audio-visual, sound, movie and others and the program is easy to understand so that it can be used as a good learning media, [9].

E-module is the use of ICT technology in teaching materials, in which photos or videos can be entered that contain contexts related to the subject matter. E-modules can also be used anywhere, so it is more practical to carry them anywhere and can present information in a structured, interesting and high level of interactivity. In addition, the learning process no longer depends on the instructor as the only source of information, [10].

The government responds to the challenges of millenial learning needs by revising the curriculum from a content-based curriculum to a competency-based curriculum, which came into force in the 2006/2007 school year. In 20013 the curriculum was refined and named the 2013 curriculum. Until now the curriculum is still in use. To adjust the re-learning needs to be revised, so called the revised edition of the 2013 Curriculum.

The revised edition 2013 curriculum has been implemented at all levels of formal education since the 2016/2017 school year. The implementation and development of curriculum tools refer to the eight national standards of Indonesian education, including 1) Graduates Competency Standards, 2) Content Standards, 3) Process Standards, 4) Assessment Standards, 5) Infrastructure Standards, 6) Management Standards, 7) Standards Funding, and 7) Educators and Education Staff Standards [11]. Each of these national education standards is spelled out in a number of educational metrics regulations.

All efforts made by a teacher in planning, implementing, evaluating, reflecting, and following up must refer to eight established standards. Physics is one of the pillars of achieving Graduates Competency Standards. As a supporting pillar of course physics learning is carried out with reference to eight educational standards. The standard process mandates the use of scientific oriented models and learning methods, [12] in learning physics.

The learning process should integrate character and cultivate Skills, as stated by Afandi: 21st Century learning is simply interpreted as learning that provides 21st century skills to students, namely 4C which
includes: (1) Communication (2) Collaboration, (3) Critical Thinking and problem solving, and (4) Creative and Innovative [13]. Affirmed by Afandi that Learning also needs to be carried out contextually by using models, strategies, methods, and techniques in accordance with the characteristics of Basic Competence (KD) so that learning objectives are achieved.

The high school physics learning process as expected, can be carried out if it is supported by appropriate sources and teaching materials. As stipulated in the Infrastructure Standards, that for each subject at least at school there is 1 exemplar per student textbook, 1 exemplar per teacher teacher’s manual, 840 titles of enrichment books per school, 10 reference books per school, 10 other learning resources 1 title per school (at least includes magazines, newspapers, globe, maps, drawings, CDs and teaching aids) [14]. Standards of facilities are set to support a quality learning process, to achieve competencies that are appropriate to the learning needs of the millennium.

Learning resources are of concern to researchers, because learning resources with their presentations play an important role in achieving competence. A survey of 24 schools in West Sumatra has been conducted to determine the learning resources used by physics teachers in class X. This activity is carried out to determine the level of fulfillment of learning resources as specified in the infrastructure standards.

There are at least three fundamental questions that need to be answered, regarding the quality of the learning process. First, are the sources and teaching materials used by teachers varied or not? And do the learning resources used by the teacher meet the standards for infrastructure? Specifically for enrichment learning, does the teacher use resources and teaching materials that help students learn independently and contain enrichment materials?

2. Method
This study applies survey research methods, with instruments in the form of observation formats and interview guidelines. In the high school physics curriculum there are 1) circular motion, 2) Newton’s laws of motion, 3) planetary motion, 4) effort and energy, and 5) impulse and momentum. For each unit of material the teacher conveys information about the media and learning resources used, by putting a checklist in the appropriate place. The choice of sources and teaching materials available in the instrument are textbooks, handouts, modules, and student worksheets, and other sources such as the environment and others.

The population of the study is a high school physics teacher in West Sumatra. 24 schools were selected as samples, representing schools in the city of Padang in a number of other regencies / cities in West Sumatra. The data generated from the instrument is in the form of instructional media used by high school physics teachers to teach motion material, momentum, and energy. Data in the form of qualitative data and quantitative data and analyzed using simple statistical methods.

3. Result and Discussion
A survey of 24 physics teachers of class X high school even semester in West Sumatra related to learning resources used by teachers and library collections, related to physics lessons. The types of learning resources used by teachers are presented in the Table 1.

| Learning Resources | Subject Mater Code /Presentage Use |
|--------------------|----------------------------------|
| Text Books         | 1  | 2  | 3  | 4  | 5  |
|                    | 37.5 | 75 | 100 | 87.5 | 50 |
| Handout            | 0   | 0  | 0  | 0   | 12.5 |
| Module             | 0   | 0  | 0  | 0   | 25  |
| Student worksheet  | 62.5 | 50 | 25  | 37.5 | 12.5 |
| Others             | 0   | 0  | 0  | 0   | 0   |

Subject Mater Code: 1 circular motion, 2 Newton’s laws of motion, 3 planetary motion, 4 effort and energy, and 5 impulses and momentum.
Seen from the table, that the learning resources used by teachers have not varied. High school physics teachers in West Sumatra still use textbooks as learning resources. All learning resources used are not made by the teacher. So that in this case the teacher's efforts to consider the character of students in the selection of learning resources have not yet been seen. Also not yet seen the efforts of teachers to use the environment as a source of learning physics.

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The module used by the teacher for unit 5 material is not written in the correct module format, but rather is called a student worksheet for practical activities, because it contains practicum guidance. Whereas the worksheet that the teacher uses only contains the practice questions that must be done by students, in contrast to the worksheet that contains the demands for activity in learning.

Further research on learning by teachers shows that for students who are declared complete in learning, enrichment learning has not been given that can expand and deepen their knowledge or skills. Because of this observation it is known that the teacher only gives exercises that are higher level than questions in regular learning. There are no learning resources other than the textbook used by the teacher. When asked why the teacher did not use the enrichment book, the teacher answered the same as there was no enrichment book suitable for class X semester 2 physics material in the school library. A survey of school libraries and bookstores located in the city of Padang shows that the availability of enrichment books on physics knowledge is still very limited.

Even though the teacher knows that students need enrichment learning, according to the teacher it is difficult to carry out real enrichment learning, because the child's time to study at the Sudaah school is no longer available. Children are tired, because they study all day from morning to evening. As a result, practical enrichment learning is not carried out.

Information collected through this survey shows that there are several problems related to learning physics. The problems for enrichment learning that are identified are as follows: 1) the limitations of enrichment learning resources, 2) the limitations of study time at school, 3) the limited use of the environment as a learning resource. This problem can be overcome in various ways, including the development of independent learning resources that present contexts related to physics subject matter. Learning resources that meet these learning needs are contextual based modules.

If we pay attention to the character of students in this millennium era who are more interested in the use of ICT in their various activities, also in order to meet the demands of 21st century learning that must be IT literate, various learning needs for physics enrichment can be overcome by contextual-based e-modules.

4. **Conclusion**

Based on the results and discussions that have been submitted, it can be concluded that the level of appropriateness between learning resources used by physics teachers in West Sumatra with curriculum demands is very low. Sources and teaching materials are less varied, sources and teaching materials do not meet the standards of infrastructure, learning resources for enrichment activities do not meet the needs. So it is necessary to develop more appropriate teaching materials such as contextual-based physics e-modules.

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