Identification characteristics of student in the development of integrated natural science student books integrated 21th century learning: a case study in SMP N 3 Talamau West Pasaman

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Abstract. This study aims to determine the characteristics of learners in the development of integrated science book students integrated 21st century learning on the theme of adaptation of the human body to changes in temperature. 21st Century Learning requires learners have the ability literacy, skills knowledge, skills and attitudes, and mastery of technology. The method used in this research is descriptive qualitative, where in this method spread the questionnaire to the students and do interview with science teacher. This research was conducted at SMP N 3 Talamau West Pasaman. The result of the research shows that the student's books are not yet compatible with the characteristics of the students, the learning has not centered on the students, the students are still happy if the teacher explained. Learners are not actively involved in learning, and it is essential to develop an integrated 21st century student learning book so that 21st century learning skills can be possessed by learners.

1. Introduction

In 2016 the OECD through PISA released the results of the assessment of students in various PISA participating countries in 2015. From the results released by the OECD shows the position of Indonesia is far from other PISA participating countries. Indonesia is in the 63rd position of 69 participating countries, this shows that the quality of education in Indonesia must be addressed. PISA is an assessment carried out for children who are at the age of 15 years who focus on reading skills, science, mathematics and problem-solving abilities. This assessment does not only focus on the ability of learners to gain knowledge, but it also looks at how students apply the knowledge they have gained [1][2].

The curriculum in Indonesia has undergone several developments so that students can compete in the 21st century. 21st century learning is resound so that all parties directly involved in the learning process can improve the quality of human resources. The learning process is a relationship between students and educators, students with other students and the relationship between students and learning resources. Good learning is learning that can improve the character of human resources to face global competition. Natural science learning in junior high schools according to the 2013 curriculum is carried out using integrated learning. Learning that combines learning Biology, Physics and
Chemistry. The characteristics of thematic integrated learning in SMP / MTs are adjusted to the characteristics of students.

Natural science learning in junior high schools has not used thematic integrated science learning. Thematic learning is learning that increases students' memory. Thematic integrated learning can accommodate integration between aspects of knowledge, attitudes and skills. To improve the ability of students, a very effective learning resource is needed. One source of learning is textbooks. The use of textbooks in learning can improve the ability of students. The curriculum encourages Education units to use textbooks in the form of student books and teacher books. The use of the student's book is expected to be able to increase the knowledge, character of students based on 21st century learning. To get effective learning it is expected that reciprocal relationships between educators and students, reciprocal relationships between students and learning resources. In this case the learning source in question is a thematic integrated student book.

21st century learning can build students' knowledge and skills. Skills learning and innovation in the 21st century are prepared to enhance 21st century abilities which include creativity, innovation, critical thinking, problem solving, communication and collaboration. 21st century learning requires students to be actively involved in learning. Learning mechanisms have multi-directional interactions and use various contextual learning resources. The learning developed must be able to encourage students to develop high-level thinking skills (HOTS).

To achieve the 21st century learning characteristics, educators or education experts are expected to be able to develop effective learning resources in accordance with the demands of the curriculum. Learning resources are developed in accordance with the characteristics of students so that there is a relationship between students and learning resources. One source of learning is student books. The student book is a guide that includes material and concepts. The advantages of student books can be used at school or at home so students can improve their understanding of the concept of learning. Improve reading literacy skills and student character.

Based on the study of literature about the problems and characteristics of 21st century learning and the demands of learning that are expected in the 2013 curriculum. As one solution developed a learning resource in the form of thematic integrated student books. Student books are developed by taking into account the characteristics and development of students. In order for learning to occur in accordance with curriculum expectations. For this reason, this research investigates the characteristics of students in developing student books with the theme of adaptation of the human body to changes in temperature integrated 21st century learning.

2. Research Methods
The method used in this study is a qualitative descriptive method. Where researchers will distribute questionnaires to students and conduct interviews with integrated science subject teachers. Descriptive research is a research that describes a problem by focusing on actual problems and photographing events to be the center of attention. Qualitative research is a method that understands and interprets the meaning of an interaction between human behavior in certain situations according to the researcher's own perspective. Qualitative descriptive method is a method that describes an actual problem and interprets the interaction of students’ behavior according to the researchers themselves.

Case studies to see the characteristics of these students were carried out at Talamau 3 Middle School in West Pasaman. Researchers give questionnaires to students. The questionnaire provided contains the characteristics of students that are adapted to the learning characteristics of the 21st century. In this questionnaire researchers used a Likert scale to get the appropriate results. Likert scale is the most widely used scale for behavior measurement. This scale consists of statements and is accompanied by an agree-disagree, often-never, slow, good and bad answer (depending on the purpose of measurement). Likert scale aims to: (1) Describes roughly the position of individuals in the group (2) want to compare the score of the subject with the normative group (3) Arrange a simple measurement scale.
3. Result and Discussion
In general, the results of this study are looking at the characteristics of students. The technique used in this study is by distributing instruments to several students. Instruments that contain responses from students related to integrated science learning and 21st century learning characteristics. 21st century learning characteristics consist of several parts, namely: 1) centered on students, students interact; 2) multi-direction learning; 3) students are advised to be more active in learning; 4) students are able to work together; 5) students are able to develop high-level thinking skills.

The results of the identification of attitudes and responses of students towards science learning in schools can be seen in Figure 1.

![Figure 1. Identification of students' attitudes and responses to science learning](image1)

From the results of the analysis of the instrument the students' responses to integrated science learning. As many as 76.09% of students are motivated to be involved in problem solving. Whereas for science learning that has been implemented at this time there are 77.17% of students stated that current learning has made students able or skilled in problem solving and can find their own concepts. Students in 21st century learning are required to be able to develop high-level thinking skills. For that students who have high motivation in problem solving. The second result of instrument analysis is how 21st century learning has characteristics so that students are able to work together. Results of 89.13% of students enjoyed working together in groups and 73.91% of students often expressed their opinions in groups. This means that students in Talamau Middle 3 Middle School Pasaman Barat have a high interest in working together in groups. For this reason, the ability of educators or education is needed in developing learning resources that support the interests of students. The results of student responses can be seen in Figure 2.

![Figure 2. Identification of Students' Problem Solving Ability](image2)
Literacy is a demand that must be achieved by students. According to the OECD there are four literacy sections, namely: 1) reading literacy; 2) Mathematical literacy; 3) Science literacy; 4) Problem Solving Literacy. Students in SMP N 3 Talamau mostly were very happy to read books, which amounted to 82.29%. This is in line with the demands of 21st century learning and curriculum so that learning resources and learning processes are developed based on the characteristics of students. Expected learning is multi-direction learning. In this study, 81.25% of students were more likely to like the teacher who explained. With this data, it can be seen from the characteristics of students in SMP N 3 that you still tend to like one direction, this is not in accordance with the demands of 21st century learning. Results Identification of students' literacy abilities can be seen in Figure 3.

![Identification of Students' Literacy Ability](image)

**Figure 3. Identification of Students' Literacy Ability**

The results of this study can be used as a basis for developing student books. The student book developed is a thematic integrated student book. The theme taken in this development is the adaptation of the human body to changes in temperature. Thematic integrated student book is one of the learning resources developed in accordance with the demands of the 21st century curriculum and learning. From the results of the analysis found that students in SMP N 3 have high interest and motivation, have interest in reading, enjoy working in groups, often express opinions in groups, and are motivated to get involved in problem solving. With these characteristics the development of student books with the theme of the adaptation of the human body to changes in temperature by integrating with 21st century learning can be done. In the future, the learning resources developed must create multi-direction learning and can motivate students to be actively involved in learning.

4. Conclusion

From the results of research on student characteristics in developing student books, it was concluded that students have high interest and motivation in problem solving. Students enjoy working in groups and often express opinions in groups. These characteristics are in accordance with 21st century learning characteristics. Therefore, developing student learning resources / books in accordance with the characteristics of students mandated by the curriculum can be done.

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