Analysis of student textbook in the development of integrated natural science student book with the theme sense of sight and optical devices using connected model for integrated 21st century learning

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Abstract. The skills that must be possessed by students in 21st century learning is to prepare quality of character, basic literacy and competence. The purpose of this study to analyze of integrated science student textbooks with the theme of the sense of sight and optical devices, instruments, whether these textbooks are already using an integrated learning type connected and integrated of 21st century learning. The method used in this research is descriptive method with qualitative data analysis techniques. The field trials conducted in SMP N 11 Jambi. The results showed that there are still some shortcomings in the existing science student books are: 1) not maximal use of the type of connected integrated learning on student text book, 2) the absence of an integrated natural science student textbooks are developed in accordance with the 21st century learning. Based on the research results it is important to the development of integrated natural science student book with the theme of the sense of sight and optical devices using connected model for integrated 21st century learning to lead learners have a 21st century learning skills.

1. Introduction

The 21st century can be regarded the century of knowledge as characterized by the occurrence of a major transformation from an agrarian society to an industrial society and continues to the knowledge society [1]. Within the framework of preparing for the 21st century man who lived in shades of community knowledge and competence with a wave of rapid change, we need a paradigm shift in the learning system. 21st century learning is learning that integrate literacy, skills, knowledge, skills and attitudes, as well as mastery of technology. The most important thing in learning 21st century is to encourage students to have the knowledge base and deep understanding becoming lifelong learners [2]. The goal of learning the 21st century is to encourage learners to master the skills appropriate to the 21st century.

The 21st century skills is one topic that is often discussed lately. 21st century learning emphasizes on four competencies, namely communication, collaboration, critical thinking, and creativity. In the face of 21st century learning, every student should have the critical thinking skills, knowledge and capabilities of digital literacy, information literacy, media literacy and mastering information and communication technology [3] [4]. In addition, it is to face the challenges of the 21st century cannot be separated from Indonesia's own national character one of which is a religious character, which the Indonesian national educational foundation in fact is the character formation of national life.
The Indonesian government as the guarantor of implementation of education has made efforts to improve the quality of education in Indonesia in accordance with the demands of the 21st century. One of the efforts is to do a curriculum improvement. The new curriculum applied to all subjects including the integrated natural science. Natural science is one branch of science which deals with natural phenomena systematically. In general, natural science covers three basic sciences, including biology, physics and chemistry [5]. Integrated natural science teaching is a combination of various basic sciences study science, then in practice is no longer separated into a single unit. In integrated learning there are various models as proposed [6] as much as 10 integrated learning model, namely: Fragmented, Connected, nested, sequenced, Shared, Webbed, Threaded, Integrated, Immersed, and Networked. Of the 10 species of the integrated model Fogarty selected models connected, because the model connected is a model of curriculum integration between fields of study, which obviously connects one topic, skills, and concepts in the subject sub-topics associated with topic, skills, and concepts in the sub-principal other topics in the fields of study, the primary key connected models is the presence of a conscious effort to connect the field of study in the disciplines [7].

In the government's latest curriculum also provide textbooks in the form of a book teacher and student books. Student book or commonly called textbook is one resource that serves as a means of supporting learning activities [8]. Each chapter of the book comes with a map concept students, introduction, part of students' activities, both experimental and non-experimental or discussion, practice questions, a summary of the evaluation, and tasks for students [9]. Their textbooks, students can help teachers to deliver learning materials so that learning objectives can be achieved, and to face the challenges of the 21st century textbooks should integrate the skills required in the 21st century learning.

But the facts found in the field show that there are still many junior high schools that have not taught science in an integrated manner. Teachers still use the old science teacher and the discussion is still separated between Physics, Biology, and Chemistry. Some of the factors that cause has not taught science in an integrated manner, including educational background of the teachers come from the fields of physics, biology, and chemistry that needs to be cooperation among teachers, and there are no teaching materials such as text books Integrated Natural Sciences that Integrated and Most likely the book has not met the demands of 21st century learning. Based on the existing problems, this study will analyze the integrated natural science student textbook with the theme of the sense of sight and optical devices using integrated learning connected type and integrated of 21st century learning.

2. Methods
The research is qualitative descriptive research. The main target of this phase of the research is the analysis of textbooks, students in the development of integrated natural science student textbook integrates 21st century learning. Research data were taken from case studies that researchers do in junior high school (SMPN) 11 Jambi City. Informants selected are students in class VIII, which consists of 30 people. The instrument used in this study is to use the questionnaire to analyze the students' books by using a Likert scale with 4 options scale. This study aims to determine the Integrated Natural Science student text book analysis with the theme senses of sight and optical devices are already using integrated learning connected type and integrated of 21st century learning.

3. Results and Discussion
The results of this study contain data on the use of integrated learning connected type and integration of the 21st century learning in the integrated natural science textbook of class VIII student with the theme of the sense of sight and optical devices which includes two aspects; (1) the use of Integrated Natural Sciences learn to connect type, and (2) the integration of 21st century learning. Both aspects are translated into a number of indicators in the form of a statement to be completed by the student. Aspects connected type consists of 10 indicators and aspects of 21st century learning consists of five indicators, namely: a religious character, critical thinking skills and problem solving, communication skills, creativity and innovation, and collaboration.
Data from the analysis of the type of connected, integrated learning application on Integrated Natural Science student text books with the theme of sight and optical devices can be seen in Table 1. Graph of relationship of percentage value of the use of connected type integrated learning with integrated learning indicators connected type can be seen in Figure 1.

**Table 1. Results of Integrated Learning Implementation Analysis Connected Type In Textbook Student**

| No Indicator | Statement                                                                 | Value | Category |
|--------------|---------------------------------------------------------------------------|-------|----------|
| 1            | In the integrated natural science student text books already connecting one concept to another | 42.5% | Disagree |
| 2            | In the integrated natural science student text books already connects one eyes topic with light topic | 23.0% | Disagree |
| 3            | With the integrated natural science student text books have connected one skill with other skills | 50.0% | Agree    |
| 4            | Integrated natural science textbooks, students have connected one task to another task on the thematic sense of sight and optical devices | 43.5% | Disagree |
| 5            | There is a connection between concepts, topics, ideas in integrated natural science student text books with the thematic sense of sight and optical devices | 45.0% | Disagree |
| 6            | Integrated Natural Science Textbooks Students have developed key concepts are continuously, resulting in a process of internalization | 40.0% | Disagree |
| 7            | Integrated Natural Science Textbooks Students allow students to assess, conceptualize, refine, and assimilate the ideas in problem solving on the thematic sense of sight and optical devices. | 45.5% | Disagree |
| 8            | In the Integrated Natural Science textbook student material that has been integrated into a single relevance of learning activity. | 60.0% | Agree    |
| 9            | The material in textbooks can be easily controlled by students and not fragmented. | 55.0% | Agree    |
| 10           | With Integrated Natural Science textbooks, students are able to express their ideas, ideas, and skills so that it is very possible between themes, materials, chapters, and skills can be integrated into a single unified understanding intact | 43.0% | Disagree |
Figure 1. The graph uses the connected type integrated learning on the integrated natural science studying text books with the thematic sense of sight and optical devices.

The results of the analysis of the integration of 21st century learning on the textbooks students Integrated Natural Sciences with the thematic sense of sight and optical devices that include several aspects such as: 1) critical thinking and problem solving skills, 2) communication skills, 3) creativity and innovation, 4) Collaboration 5) a religious character, can be seen in Figure 2.

Figure 2. Graph integration of 21st century learning in students' textbooks integrated Natural Sciences with the thematic sense of sight and optical devices.

Based on the results of data analysis showed that the use of integrated learning connected type on the student textbook with the thematic sense of sight and optical devices with an average percentage of 44.75% of the 10 indicators. This value indicates that the use of integrated learning connected type on the student textbook with the thematic sense of sight and optical devices has not been maximized. With the low average value of the use of connected type integrated learning, learners mean not getting a clear picture of the concept of the senses of vision and optical instruments, learners are also not so gain the opportunity for deepening, review, improve and assimilate the idea gradually. This is because the concepts or ideas contained in the theme senses of sight and optical devices have not been linked to the
fullest. Meanwhile, if viewed from integrating 21st century learning obtained by the average value of the percentage of critical thinking skills and problem solving by 46.70%, communication skills by 54.30%, creativity and innovation by 42.60%, amounting to 55.70% of collaboration, and the religious character of 45.50%. Can be seen from the results of integrating learning 21st century on textbooks, students are still low, meaning that the textbook the student is not optimal to integrate skills, learning 21st century and with the low average percentage value of the integration of the 21st century so learners are not ready for the challenges of the 21st century.

4. Conclusion
The use of integrated learning connected type on the student textbook with the thematic sense of sight and optical devices has not been developed to the maximum, it is proved to the average value of the percentage of 44.75% with categories disagree. While the integration of 21st century learning in integrated natural science student's text book with the thematic sense of sight and optical devices are also not yet developed, this is evidenced by the results of data analysis of integrating 21st century learning, where 46.70% of critical thinking skills and problem solving, 54 30% of communication skills, creativity and innovation 42.60%, 55.70% collaboration, 45.50% of religious character. Based on this, the integrated natural science student textbook with the thematic sense of sight and optical devices should be developed using connected type integrated learning and integrating with 21st century learning.

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