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THE DEVELOPMENT OF INTEGRATED LEARNING BASED STUDENTS' BOOK TO IMPROVE ELEMENTARY SCHOOL STUDENTS' COMPETENCE

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Abstract

Integrated learning is planned based on the theme to connect several subjects and give meaningful experience to students. Natural science subject discusses natural phenomena and the material is obtained from mindset and observation. Natural science should be introduced from childhood to Elementary School students to encourage the students to think critically and creatively and build scientific characters. Initial survey showed that elementary school students were difficult in providing students' thematic learning effectively; thereby, many students were difficult to learn and answer the questions in the online handout. Integrated learning is one of the models that can improve students' competence, therefore, students' book is needed. This research was conducted to develop students' book based on integrated learning model which were valid, pratical, and effective to accelerate students' competence. This research and development used Plomp model with three steps: preliminary research, prototyping phase, and assessment phase. The instruments of this research were interview guides, observation sheets, teachers and students' questionnaires, students' test result, skills and behavior and skills scoring sheets. The result shows that the developed students' book has been valid based on experts' judgement, teachers' responses and students. The application of students' book is effective to improve students' competence.

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INTRODUCTION

Education is very important to maintain the existence of a country. The development of education in Indonesia is done by the existence of Curriculum 2013. This curriculum is a competence based which means that the curriculum focuses on certain competence development, also emphasizes on graduates' competence with noble character, skillful, and thematic learning process. Curriculum 2013 builds students' characters that it will be implemented to their daily life. One of the demand in curriculum 2013 is the learning process centered to students using scientific approach. The subjects in Elementary schools are changed into themes which are connected to all elementary subject based on Education Level based Curriculum or Kurikulum Tingkat Satuan Pendidikan (KTSP) with real living experience. To support the curriculum, the government provides book for students and teachers. Teachers play the role as facilitator, motivator, and learning source. Teachers designed learning materials which is in line to the demand of curriculum. Thus, the students are able to master the competence listed on the curriculum. In Curriculum 2013, core competence (CC) and basic competence (BC) are regulated by the government; somehow, the strategy to reach the goals and the learning materials are given to teachers are the professional planner of the lesson.

Initiate survey in SDN 06 Lapai Padang showed that students' competence in mastering learning themes were low. Most of them are unable to master the competence in their book. This low competence of the students were caused by the uninteresting and unchallenging learning process for the students; thus, the students are unable to accept the themes in their book. Teachers were still unable to apply the theme and supporting facility in the learning process. They tend to use conventional learning, by lecturing, giving assignment, and homework. Thematic learning executed by teachers were still not based on its characteristics.

Students' book supposes to be able to involve students' actively in learning themes, since students' have difficulties in answering and finishing tasks in their book. Students' books were indicated on having text unification and contextual theme and material for all elementary school students in the city or the village because it is based on online book (BSE). This was not in line to integrated learning which is demanded in curriculum 2013 where it uses theme to relates the materials between subjects to students' real-life experience. Students' real-life experience must be different in every area. Consequently, students' book should be based on the condition of every area (with local based materials).

One of the ways to ease students is by using integrated learning based book. Integrated learning is a learning plan based on theme to relate different subjects that give students meaningful experience. Natural science materials discuss about natural phenomena obtained from opinion and observation. Tho (2003) states that natural science is defined as knowledge which is obtained theoretically and experimentally. Natural science activity is related to ecperiment. The concept of this subject can be the presentation of certain ideas in the nature. Natural science is a knowledge which is developed from observation, experiment, decision making, and theory building, known as scientific approach.

Natural science consists of facts and rules related from one to another. The facts are arranged systematically and stated in an appropriate language that is able to find and understand to communicate. Natural science has principle of truth in its learning which becomes guidance to learn. Rules are activities with values, because the activity executed with truth will be more appreciated. Natural science involves four main elements: (1) Behavior: curios in nature, natural phenomena, and causal relation in open-ended, (2) process: problem solving procedure through scientific methods. (3) product: theories, facts, principles, and law, (4). application: the application of scientific method and natural science concept in daily life. Four main elements of natural science should be appeared in natural science learning and students' behavior (Hwang, 2012). Natural science learning for elementary school level is served in integrated natural science subject. Integrated natural science is packed by merging, combine, and integrate natural science subject. The learning of natural science integrates subject components that there is not any limit to subject, because it is formulated in united problem (Hwang, 2012). Natural science for elementary student is developed based on integrative science combining behavior, knowledge, and skills (Gnanakan, 2013). Substantially, natural science

is used to develop behavior, thinking, and skills. Natural science teacher should be competent in teaching integrated science.

The target of learning process copes behavior, knowledge, and skills combined one to another. To make the subjects reflect these competences, the materials, learning models, and learning approach play important role. Problems come when teachers explain natural science material but unable to maximize their learning materials. Depdiknas (2008) explains that teachers are asked to have the ability of developing learning material as learning sources. One of the important learning materials is students' book. Students' book is an important component in learning process. The role of students' book as the material of learning process is to support the development of students' skills and competence. The Regulation of Ministry of Education and Culture No. 08 Year 2016 says that book used in certain education level, whether it is textbook or non-text is the learning tool for teachers and students.

As the steps of development and learning ways of students in low Elementary School; thus, the Regulation No. 65 Year 2014 says that Elementary student can be executed in integration. Integrated learning based on certain themes relate several subjects; for example, themes of *"Myself"* for 1st Grade Elementary School. It can be seen that Mathematics, Natural science, Social science, Indonesian, and Arts. According to Fogarti (1991), integrated learning provides discretion and depth in curriculum implementation, providing chances to students to show dynamics in learning process. This reality is supported by Dallinger (2016) saying that students under nine years old can separate the materials in details. Lagrosen (2014) opines that integrated learning gives students chance to actively participate in learning activity. The integration of the materials can be delivered in a theme as the main ideas of certain topics. The essential of learning process in all school give meaningful learning experience to students. Integrated learning can give motivation and improvement to students' learning result (Freudenberg, 2010). The scoring of integrated learning is more appropriate to use authentic assessment.

Integrated learning should be executed by teacher in implementing Curriculum 2013 (Kemendikbud, 2013). Kelly and Lemons (1991) explains that integrated learning happens using authentic material and observing topics based on supposed material. Gnanakan (2013) states that the relation of curriculum to real-life experience can be used for thematic approach. Integrated learning is a bit complicated, though its application of learning in low class of Elementary School (I, II, and III) is easy. By applying integrated learning, it is hoped that students can develop their potentials. It is inline to the result of Dallinger (2016) showing that the application of integrated learning ease teachers more to teach students based on the competence goals. The application of integrated learning in elementary schools should be focused on low class, though it can be applied to all level. Based on Gnanakan (2013), the execution of integrated learning using integrated learning model showed that there were improvements of learning understanding for students.

As the characteristics of integrated learning, there should be many variations of methods in learning process, including experiment, inquiry, role play, question and answer, demonstration, and exploration (Kelly and Lemons, 1991; Lagrosen, 2014). In integrated learning, students are conditioned to work together in group. Thus, the groups are potentially able to improve students' motivation to learn. The purposes of integrated learning are: (1) students can learn independently. (2) students can find their personality, and (3) motivate the students to share ideas and experience.

The problem of the research is formulated as: How is the development of valid, practical, and effective integrated learning book to improve the competence of III grade students? The purpose of this research is to develop valid, practical, and effective integrated learning book to improve the competence of III grade students.

METHOD

This research used research and mevelopment model of Plomp (2013), consisting of three steps, preliminary research, prototyping phase, and assessment phase. Preliminary research was done to analyze elementary school students' problem, analyze students and teachers' book, and literature studies. In prototyping, there was an arrangement of student book's draft for themed material to III grade students in 1st semester. In assessment, there was a book validation and limited trials,

using quasi experimental method with pretes-posttest group control design (Creswell, 2008). Success indicators in this research was the improvement of students' competence, better result from experimental class to the control class, and students' easiness in doing the learning process.

The subject of the research was students' book. The respondents of the research were students and teachers of III grade in SDN 06 Lapai Padang. The instruments used in this research were interview guides, observation sheets, students' book validation sheets, skills scoring sheet, students' test result, and questionnaire of students' responses to the learning process. Interview and observation were used to obtain information regarding learning condition in the Elementary school in the initial study and the executability of the lesson was assessed through students' book execution. The data was analyzed by description of statistics and inferentials to reveal the validity, practicality, and effectiveness of students' developed book.

RESULT AND DISCUSSION

The process of students' development starts from preliminary research, prototyping phase, and assessment phase.

Result of Preliminary Research

This step was aimed to get the urgency of why students' book is needed to develop. The analysis of performance was done to know the application of learning model, the use of learning media, learning sources, and the evaluation. The analysis of performance showed that the application of learning model was good. Teachers can prepare the lesson plan, learning sourcesr, and scoring. The used learning source was based on Curriculum 2013. The result of the analysis showed that the use of learning source was lower than other aspects. It indicated that there should be an enhancement to students' book as the learning source. Students' book was indicated to have uniform text and context for all students in teh city or village in Indonesia. It was not in line to Curriculum 2013. That is to say, the theme should be able to relate different subject with real-life experience of the students. Students' real-life experiences were different based on the area. Consequently, students' book should be adapted to the condition of every area.

Result of Prototyping Phase

Students' book was designed based on integrated learning model with scientific approach. Integrated learning is learning which is planned based on themes to relate different subject that it will give students meaningful learning experience. Students' book was based on integrated learning is executed on scientific approach. One book contained one theme. Students' book consisted of three sub-themes with six chapters. The materials from every learning was explained for a whole learning process. The outline of the book can be seen in Figure 1 as follow.

TITLE **ACKNOWLEDGEMENT** **TABLE OF CONTENT** **INTRODUCTION** (Short Description, Rationals, and Relevance)
Theme (title) **Sub-theme 1** (title) Learning Goals **Meeting 1** (title) Materials (based on integrated learning with scientific approach) Exercise **Meeting 2** (until chapter 6) Explained as chapter 1 **Evaluation**
Sub-theme 2 (and sub-theme 3) Explained as sub-theme 1
REFERENCES

Figure 1. Students' Book Outline

Results of Assessment Phase

1. Students' Book Validity

Students' book with integrated learning was validated by six validators (experts' judgment). The aspects of the validity were the content appropriateness, content construction, and language. Every aspect was validated by two experts. The result is delivered in Table 1.

Table 1. The Result of Students' Validity Analysis

Validity Aspects	Validator		Score of Consent	Criteria
Content Construction	1	2	0.80	Valid

Content Appropriateness	3	4	0.85	Valid
Language	5	6	0.82	Valid

Based on table 1, it can be concluded that students' book with integrated learning basis was in valid category with the average score of 0.82.

2. Students' Book Practicality

The trials of students' book were done to obtain data of book's practicality. The trials were done in four meetings. Teachers became the observer in these trials. The observer observed the learning process and students' activity. The practicality of students' book was reviewed from students and teachers' responses. The result of the analysis showed that students' book in integrated learning can be executed by students with average response score of 82.4% from teachers and 86.2% from students. Thus, it can be stated that students' book was practical.

3. Students' Book Effectiveness

The effectiveness of students' book was reviewed from the improvement of students' competence in terms of knowledge, skills, and behavior in every meeting. The average competence of the students is served in Table 2.

Table 2. Students' Average Competence

Competence's Scope	Meetings				Average	Category
	1	2	3	4		
Knowledge	74.2	75.8	79.3	82.4	77.9	Good
Skills	75.3	78.2	83.7	87.8	81.3	Good
Behavior	73.5	78.9	85.1	92.4	82.5	Good

The average competence of students' competence in all four meeting were 82.4 with passing percentage of 87.1%. The average skills competence of students in four meeting was 87.8 with passing percentage of 89.4%. The average competence of behavior was 92.4. The competence of behavior to all students was good. It can be concluded that more than 85% of students have been classically passed; thereby, it can be stated that students' book was effective to improve their competence.

Discussion

Students' book with integrated learning basis and scientific approach was valid. It was because the delivery of the book has coped all components, including delivery systematic consistencies, the orderliness of the concept, the conformity of the materials, text, table, picture, and reference delivery, learning reinforcement in the beginning of the lesson, summary, scoring, feedback, and follow up (BSNP in Muslich, 2010). The result of the trials showed that students' book was practical and effective to improve students' competence. Students' competence improved in every meeting. The improvement of the meeting was due to the use of students' book which ask students to be curious and do the experiment by themselves based on scientific steps. Students were responsible and independent to themselves in the learning process inside and outside of the class. They were accustomed to do every task and work hard in finishing exercise and evaluation. Fithriyah (2015) in his research said that learning modules with thematic based was effective to improve students' learning result.

Students with confidence and high motivation will have high score. Meanwhile, students with high science test score tend to have positive attitude to science. It is in line to temuan Patrick (2007) and Glynn (2007) saying that motivation is very influential to students' learning achievement. Besides, this result was also consistent to the findings of international study of TIMSS 1999 and TIMSS 1995 (House, 2004). Papanastasiou and Zembylas (2004) states low science achievement can be changed with stimulation of positive behavior to students.

This research was supported by Rahayu (2013) concluding that the application of scientific approach can improve students' knowledge, behavior, and skills. Udompong (2014) finds that the application of scientific approach can build positive behavior of students' to science. Thematic learning can improve students' learning result and motivation (Chen, 2012; Liu (2010). Thematic foreign language subject will be more meaningful (Cadavid, 2003). Thematic learning can improve students scientific work (Pitadjeng, 2009), improve students' lifeskills (Rede, 2010), and

improve students' mastery to science (Handayani, 2011).

CONCLUSION

The application of students' book based on integratd learning and scientific approach was valid, practical, and effective to improve students' competence. Students' competence was valued from knowledge, skills, and behavior to thematic learning. Students' competence in all fields showed their improvement in all meetings. In average, their competence has passed good category, since more than 85% students has got the supposed indicator. It is suggested to the teachers to develop this developed book.

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