

Practicality of Science Student Books with the Theme of Energy in Life Based Integrated Local Materials Using Integrated Models for 21st Century Learning

Zaitul Hidayat¹, Rahima Syabrina Sarmi¹, Ratnawulan^{2*}, Desnita²

¹Student of Magister Degree Program of Physics Education, Universitas Negeri Padang Jl. Prof. Dr. Hamka Air Tawar Barat Padang-25131, Indonesia

²Lecturer of Master Degree Program of Physics Education, Universitas Negeri Padang Jl. Prof. Dr. Hamka Air Tawar Barat Padang-25131, Indonesia



Abstract- Science student's book should Contain learning and assessment that is relevant to the learning characteristics of the 21st century that aims to develop talents, potential learners to character, interests, literacy and competent. To make use of this science student's book, then need to be practiced. The purpose of the practicality is to know the practiced science student's books with the theme of energy in life based integrated local materials using integrated models for 21st century learning to use Likert Scale with 2 practitioners is two teacher from Junior High School 11 Sijunjung, Sumatera Barat and 34 practitioners from the student's. The questionnaire used the the data of collection method. The result is composed of fill in teaching materials, offerings in teaching materials and the benefits of teaching materials with practical categories. While practitioners composed from the student's same with two teachers. Conclusion, overall the science student's books with the theme of energy in life based integrated local materials using integrated models for 21st century learning Be avowed practical and it can to be use in school.

Keywords: Practicality, Science Student's Book, Local Based Materials, 21st Century Learning.

I. INTRODUCTION

Education is an activity that can optimize the development of learners starting from the potential, skills, and personal characteristics of learners. Educational activities in Indonesia are currently directed toward the achievement of educational goals. The purpose of education will certainly lead to success in the world of education and can face the challenges of the 21st Century. So, education is very important to shape human nature or person, optimize its development to be better and ready later in the face of 21st Century challenges.

Education has not been able to develop at the same pace with current technology continues to grow. Currently, the education required to apply a range of skills into learning in order to help improve the efficiency of various types of

student. Learning resources is a major factor that can support to optimize skills - skills possessed by students one of them is a student book. Student who used school books are still not optimal manufacture and use, because the book has not been terintegrasi student learning is the skill of the 21st century 4C. There fore the learning objectives will be difficult to achieve Integrated Science [1].

Student book is a book that contains a description of the subject matter or the particular field of study, systematically arranged and have been selected based on specific objectives, learning orientation, and development of learners to be assimilated. Student book is used as a learning tool in learning activities at school.

Students used books will be eligible to be used if it is practical to use. Before the practitioner in the student book that would be used, carried out prior validation of the instrument of instrument practicalities of that instrument is used later in the practicalities of a decent instrument used validation,

Sheets practicalities of Integrated Science Student Book, used to study the response of teachers and learners about the practicalities of the products developed. The practicalities instrument in the form of a questionnaire completed by teachers and learners who have been carrying out learning activities using Integrated Science Student Book.

The contents of the book are a translation or a description of the student's learning materials specified subjects in the curriculum [2]. Learning material in the book the student should have content and process of learning about the local material and uniqueness to form students' understanding of local materials in the area of residence of learners. The learning process relevant and meaningful to learners created through an integrated learning [3]. Integrated learning based on themes and connect a range of subjects to give the students experience a meaningful [4] and understanding learners become more whole [5]. Material in Junior High School 1 for natural science subjects based on the theme that connects physics, biology and chemistry concept as a whole [6].

The media content analysis of learning in much lower quality scores. It can be seen that the quality of the contents used in the instructional media used by teachers in schools is still low and does not correspond to global challenges. Therefore, it takes the book Integrated Science to improve the competence and professionalism of teachers to meet the demands of the development of skillss / character of 21st century [7]. While the integration of 21st century learning in integrated natural science student's text books are not yet developed Also, this is evidenced by the results of the data to the analysis of integrating 21st century learning [8]. Reviews These characteristics are in accordance with 21st century learning characteristics. Therefore, therefore, developing student learning resources / books in accordance with the characteristics of students mandated by the curriculum can be done [9].

Effective learning media to convey the concept of a particular science, the understanding of the concept can be accepted by the students and easy. This media is suitable for Junior High School 1 students entering the formal operational stage of cognitive development where students have been able to think abstractly. With the help of textbooks, students can

understand the concept of a well-maintained science without having to do their own experiments in the laboratory. Learning to use a model that is implemented optimally together, students can obtain information well. Such information can then be used by students to assimilate a new concept with the concept of the students so that no meaningful learning can improve students' understanding of the concept [10].

Integrated science teaching in schools needs to integrate scientific paradigm with the perspective of learners about the terms in science and physical phenomena that occur in natural surroundings. Background activity and local content in the environment of the learners Also Become one of the important factors that could affect the success of the learning process. Conceptual knowledge learners have been formed from everyday experience and through knowledge passed down for generations. Therefore, the socio-cultural environment needs to be considered in developing integrated science teaching in schools.

Learning will lay the groundwork and competence, competence measurement in order to have the skills to think from the simple to the higher-level thinking processes. The learning process will start from something that's easy to get difficult. With a simple evaluation of thinking would be the stairs for learners to improve competence towards someone who has a critical mindset. Someone who has the ability of critical thinking, creativity, collaboration and good communication will also increase the character, so that the knowledge and competencies mastered will make it have an attitude / character responsible, hard-working, honest life. One of the subjects in the study who was instrumental in shaping students' personal is Natural Sciences.

Integrated science teaching materials will be able to answer the challenge. Learning materials connected with the facts and phenomena that occur in everyday life or learning that is factual based local materials where learners make the learning process, to help understand and enhance the learning material of the 21st century skills that are taught in an integrated thematic will increase student interest in learning, helping students connect their understanding, widen the assessment strategy, keeping students tertap connected with learning, curriculum simplifies and saves teachers time because it combines several subjects and connecting material with the real world and life experiences of students [11]. Integrated learning is learning with a specific theme for hooking interdisciplinary by hooking into everyday life. In learning science can be done with a variety of models of integration [12]. A number of integrated learning models is

suitable for learning science developed in the level of education in Indonesia. The three models in question is a model of connectedness (connected), the model cobwebs (webbed), and models of integration.

Integrated learning with type integrated model that combines teach some subjects to prioritize the concepts, skills or attitudes that can be integrated on the respective subjects is based on the central theme. Integrated learning psychological types can provide a meaningful experience for the child, because the child has directly and connect with other concepts. This model combines several subjects by using the theme as a binder. Therefore, this model is known as thematic learning. One strength of this study is to motivate students to learn and can help students to see an overall idea. But its weakness, this study is highly dependent on the selection of the theme of learning. Selection of a good and appropriate theme will engage students.

Integrated science teaching in schools needs to integrate scientific paradigm with the perspective of learners about the terms in science and physical phenomena that occur in natural surroundings. Background activity and local materials in the environment of the learners also become one of the important factors that could affect the success of the learning process. Conceptual knowledge learners have been formed from everyday experience and through knowledge passed down for generations. Therefore, the socio-cultural environment needs to be considered in developing integrated science teaching in schools. Teachers to pay attention to four things for bringing the learning process, namely 1) provide an opportunity for learners to express his thoughts, to accommodate the concepts or beliefs held learners, who are rooted in traditional science. 2) Presents to the student's examples of incongruity or miracle (discrepant events) are actually commonplace according to the concepts of basic science. 3) Encourage students to actively ask 4) encourage learners to make a series of schemes on the concepts developed during the learning process. The end goal is to make learning science can be useful for students and for society [13]. 3) Encourage students to actively ask 4) encourage learners to make a series of schemes on the concepts developed during the learning process. The end goal is to make learning science can be useful for students and for society [13]. 3) Encourage students to actively ask 4) encourage learners to make a series of schemes on the concepts developed during the learning process. The end goal is to make learning science can be useful for students and for society [13].

Given the importance of Natural Sciences in everyday life, the quality of science teaching needs to be improved.

Improving the quality of science teaching can be seen from the planning, implementation and assessment of learning assessment. Learning resources that are required in the curriculum in 2013 in Indonesia one of them is a student book. Student book is a means of learning for students, so that learners can improve the knowledge base for higher education [14]. Their learning resources to enhance the knowledge of learners and the learning conditions are good. Learning conditions are created is expected to encourage students to actively look out from a variety of sources through discussion, observation, and the activities of practice.

Reality on the ground, based on assessment of 21st century skills of students in junior secondary school in the area Sijunjung, Sumatra Barat, Indonesia in the academic year 2018/2019 there are any discrepancies with the expectation that happened at school. 21st century skills of learners are still low. The percentage of students in learning science is also quite low maybe below 60%. The results of observations conducted at Junior High School 1 in the area Sijunjung, West Sumatra, Indonesia, is currently in school still uses the learning process more focused on learning that asks students to understand the subject matter by listening to the explanation of the teacher (teacher centered), and reading books or learning resources are provided at the school. As well as the school has not been to assess and apply the skills 4C (Critical thinking skills and problem solving, Creativity and innovation skills, communication skills and collaboration skills). Implementation of Integrated science teaching have not been implemented to the maximum, this is due to the importance of books students in learning is not a serious concern in learning. Guide students into a learning resource for students so that they can guide the learners in understanding science concepts. Student book has the advantage that there is a lot of information on knowledge, attitudes, and skills to the achievement of competence of learners [15]. this is due to the importance of books students in learning is not a serious concern in learning. Guide students into a learning resource for students so that they can guide the learners in understanding science concepts. Student book has the advantage that there is a lot of information on knowledge, attitudes, and skills to the achievement of competence of learners [15]. this is due to the importance of books students in learning is not a serious concern in learning. Guide students into a learning resource for students so that they can guide the learners in understanding science concepts. Student book has the advantage that there is a lot of information on knowledge, attitudes, and skills to the achievement of competence of learners [15].

Therefore, the need for the practicalities of student books is easy to understand, interesting and efficient. Through Preliminary Research books used in teaching students who have not been in line with expectations. Books of students who are expected to have a language that is simple and easy to understand, according to the scientific and include skills - the skills of the 21st century and in conformity with the guidance of national education today is to improve the skills of the 21st century in order to respond to global challenges.

Observations show that the implementation of the integrated science teaching is still not performing well because there are still many constraints faced by both teachers, learners and of learning resources are used. Then, based on previous research on the development of the science student book still has its limitations and shortcomings. Therefore, the aim of this study was to test the practicality of the student book SCIENCEterpadu with theme-based energy in the lives of local materials using integrated models to enhance 21st century skills.

II. METHODS

This research is a descriptive research. Descriptive study aimed to describe the phenomena or events [16]. Data collected in the form of figures are interpreted in the form of description. Design of the book was given to practitioners in practicality test. Practical is a process to assess whether the design of the product is practical or not to use.

Practicalities closely with the ease and learners progress made in the use of Integrated Science Student Book. Gluepracticality two test use was twofold: practicality test sheet according to teachers and practicality test sheet according to learners. The following indicators practicality of the product to be used in the development of student book-type integrated with the energy theme in the lives of local material based Sijunjung area to improve the skills of the 21st century in Table 1.

Table 1. Indicators practicality of the product

No.	Indicator	Sub Sub Indicator
1	The contents of teaching materials	In accordance with the competence
		In accordance with each basic competence
		The substance of the material
		Easy to understand
		Contains the 21st Century Skills

2	Grain in teaching materials	The order of presentation
		motivation
		present information
		interesting
3	Benefits of teaching materials	Time efficiency
		Activeness and understanding learners

Practicalities questionnaire data analysis products using the Likert Scale. The practicalities of analysis steps performed are as follows:

- Give a score for each item answers strongly agree (4), agree (3), not agree (2), and strongly disagree (1).
- Add up the total score for Each practitioner for all indicators.
- Giving the practicalities value by using the formula:

$$P = \frac{f}{N} \times 100\%$$

Information:

P = The end

f = Earned score

N = maximum score

Category practicality can be seen in Table 2.

Table 2. Category Practicality

No.	Value	Criteria
1	81% < x ≤ 100%	Very Practical
2	61% < x ≤ 80%	Practical
3	41% < x ≤ 60%	Quite Practical
4	21% < x ≤ 40%	Less Practical
5	0% < x ≤ 20%	Not Practical

Source: Modified from Riduwan [17]

Based on Table 2 it can be seen that the students developed practical book when it has a score at the interval 61-80.

III. RESULT AND DISCUSSION

The test is done in class VII Junior High School 1 Sijunjung. Implementation of the trials held four meetings. The material on which the material Global Warming meeting four times a meeting where the number of hours of teaching

science in one week is 5 hours of lessons. After all the meetings completed, students were asked to complete a questionnaire practicality student book. The same thing is done by the teacher. The data practicality student book is described as follows.

Testing practicality Integrated Science student book involves two teachers and 34 students of class one Junior High SchoolSijunjung. There are five steps in this phase: 1) objective and user guide that explains to teachers and students; 2) Teachers were asked to test the practicality of books students who want to use; 3) after the book practicality test students by teachers, the next book in the update by researchers in accordance with the advice of the teacher; 4) after the book Integrated Science students are introduced, students were asked to collaborate in their discussion group; 5) in the group - a group of students learning with discussion method, using the book-based Integrated Science students of local materials and facilitated by teachers; 6) teachers observe students to see their difficulties; and 7) the students were asked to complete a questionnaire practicality. Therefore,

Teacher questionnaire responses provided to determine the response of teachers to guide students who have already been developed. Teacher questionnaire responses compiled from several indicators that are easy to understand, interesting, and efficient. This questionnaire is filled by two science teachers. Analysis of data obtained from the questionnaire responses respectively practicalities of teachers to guide students, in quick results practicalities sheet teacher response can be seen in Table 3.

Table 3. Results Analysis Questionnaire Response practicalities of Educators

No.	Indicator	Value (%)
1	Easy to understand	92.85
2	interesting	92.50
3	efficiently	87.50
Average		90.95
Category		Very Practical

Based on Table 3 shows that the assessment of teachers to guide students Integrated Science-based integrated-type local mauatan Sijunjung areas that have been developed has a very practical category with an average value of 90.95%. The lowest value is in the category cost efficient preparation and development of the student book. Respondents teachers assess students' books were developed that can assist teachers in delivering learning materials and can be helped by the material that is integrated and based on local materials

Sijunjung area with a fact of life learners in their environment. For more detail can be seen on the following chart.

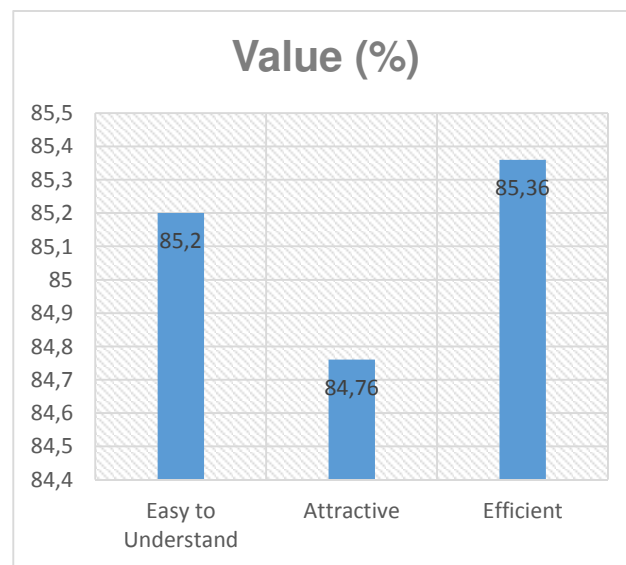


Fig 1. Graph of practicality by the teacher.

After the practicalities of the teacher and several student's small groups (consisting of 8 students of different levels of pengetahuanya) taken from a different class than the class that will be used as samples for research, obtained some revisions were done on students' books Integrated Sciences on the theme of energy in life based creatives local. As shown in the figure below.

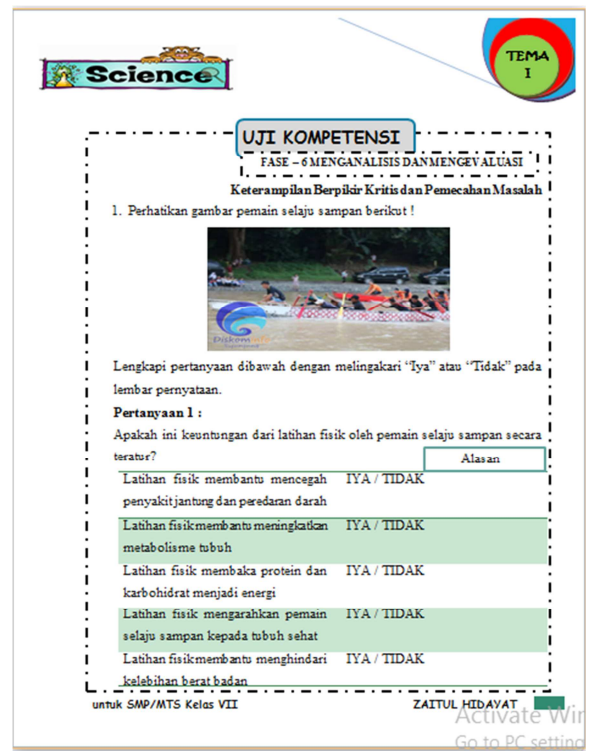


(a)



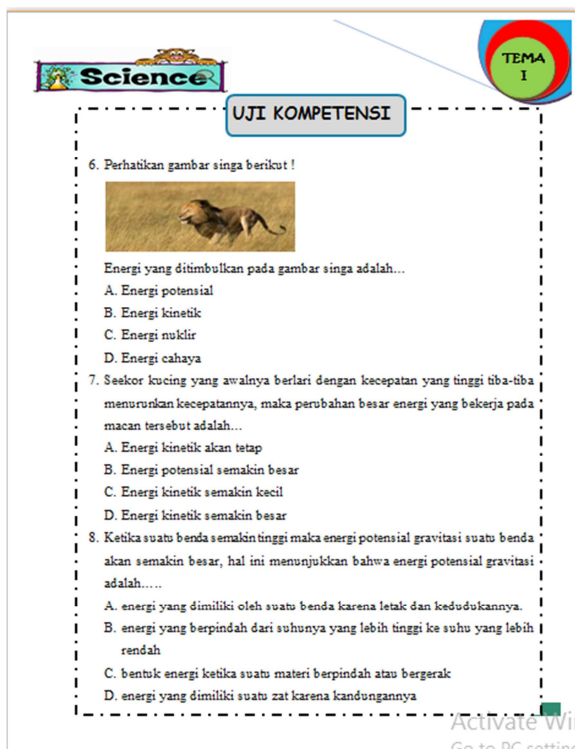
(b)

Fig 2. Revision of the student book cover to make it look the identity of the book: (a) Prior to the revision; (b) After revision.



(b)

Fig 3. Revision orientation questions: (a) Prior to the revision; (b) After revision



(a)

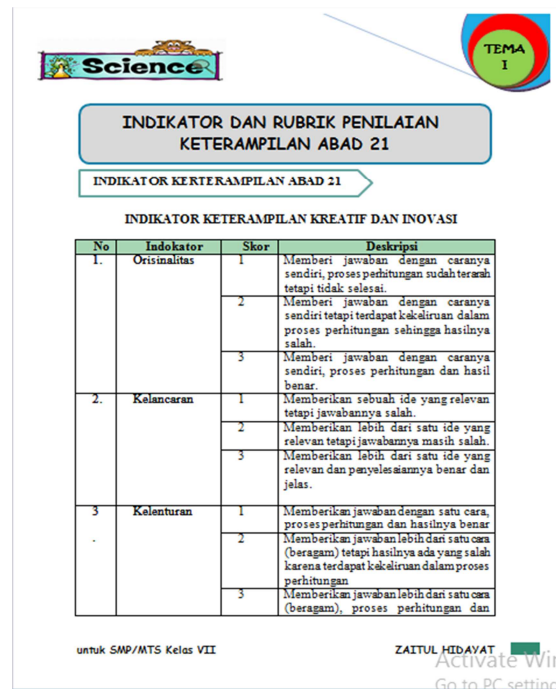


Fig 4. The addition of the assessment indicator Integrated Science Student Book

Practicality test students' books from the response of learners using the questionnaire responses of learners. Questionnaire practicality of the book consists of three indicators with 14 statements. Those indicators include: 1) easy to understand in terms of material, mind maps, sample questions, exercises, activity sheets, and evaluation and assessment, 2) attractive in terms of color composition, themes concerning the matter, and full of information and assessments century skills 21, 3) efficient in terms of time to understand the students' books and can be used without a teacher or friend. In addition, testing the practicality of books students use a different questionnaire. Initially, the indicators for the practicability test was developed based on three aspects: easy to understand, interesting and efficient. The participants were asked to respond by using a 4-point Likert scale, from strongly disagree to strongly agree. At the end of the questionnaire practicality, an open-ended question was added to ask for a recommendation to revise the Integrated Science student's book. The results of the analysis of the practicality described in the next table.

Table 4. Results of the practicalities Response Assessment of Students

No.	Indicator	Value (%)
1	Easy to understand	85.20
2	interesting	84.76
3	efficiently	85.36
Average Total Category		85.11
		Very Practical

For more details can be seen on the following chart.

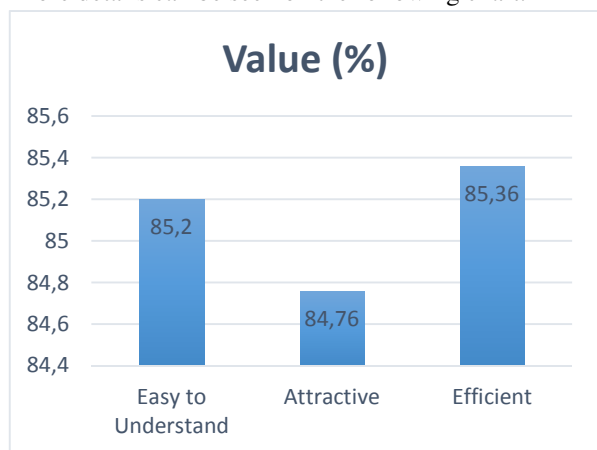


Fig 5. Graph of practicality by the student's.

Practicability test students' books made by teachers and learners. Acquisition of the practicalities of data obtained

from the practicalities questionnaire filled out by students and teachers. Practicality visits from student book is easy to understand, attract, and inefficiency of the student book. The level of practicality views of whether the teacher (and other experts) consider that the material is easy and can be used by teachers and learners [18]. Test practicalities done through three phases: evaluation of one-on-one, small group evaluation and field testing.

The results of the evaluation stage one by one and small groups that are in the practical category. The product is practical if the measurement of the instrument is at a value $60\% < x \leq 80\%$. This shows that the students' books have been easily understood and appealing, but inefficient *siswatersebut* book because the time is quite limited in its use [17].

The results of the field test phase in the category very practical. The product is practical if the measurement of the instrument is at a value $80\% < x \leq 100\%$. Field tests conducted by teachers and learners. This indicates that the material in the book *siswaterlah* easily understood, interesting, and efficient use of time for both teachers and learners. Student books can be used to facilitate the teachers of learners in the learning process, which means very practical in carrying out the study.

Based on the results of the field tests easily understood aspect, attractive, and efficient conducted in Junior High School *Sijunjung* can concluded Integrated Science student book-type integrated energy theme in the lives of local material based *Sijunjung* area to improve the skills of the 21st century is very practical.

IV. CONCLUSION

The result of research and discussion demonstrate the practicalities of testing students walk *degan* good book, the practicalities do have fulfilled materials development pattern in accordance with the characteristics of good teaching materials. It also means that the student book has fulfilled a practical indicator that includes easy understanding, interesting and efficient. Thus, the textbook can be practically used in integrated science teaching in schools.

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