Validation of integrated science teacher book integrated mode with scene life energy in the regional local content based Sijunjung for 21st century skills

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Abstract. Prior to the development of integrated science teacher book-type integrated with the energy theme in the lives of local content based Sijunjung area to improve the skills of the 21st century, it is necessary to do the validation. Validation is done teacher book aims to examine the content validity and construct validity. Content validity with respect to the content and format of the book the teacher developed, while the construct validity with respect to the structure and characteristics of teacher-developed book. In addition to content validity and construct validity, it is also necessary to test the validation language to see the use of the language used in the book of teachers in accordance with the correct EYD and also carried out a validation test graphics. Validation of Integrated Science teacher book-type integrated with the energy theme in the lives of local content based on the area Sijunjung performed using validator Aikens V with 5 of them 3 experts and two practitioners. Collecting data using questionnaires. From the results of research by five people validator, then book the type of integrated science teacher integrated with the energy theme in the lives of local content based Sijunjung area to improve 21st century skills considered valid. In conclusion, the type of integrated science teacher book integrated with the energy theme in the lives of local content based Sijunjung area to improve 21st century skills have been developed and used by teachers in schools.

1. Introduction
Education can be seen as the essence of human life for both personal and community development. Their challenge for a better future can be addressed through quality education. Superior human
resources can also be generated through quality education. The education process is expected to form a quality human capable and proactive answer the challenges of the times are always changing.

Nowadays education has entered the 21st century learning. 21st century learning is learning that requires students to have the skills, knowledge and abilities in the field of technology, media and information, learning and innovation skills as well as life skills and career. Skills that become the focus in the 21st century is pembejaran competence for media literacy skills and information technology [1]. 21st century learning requires thinking skills in learners that requires them to be able to find solutions to solve the problem through the knowledge he had. Learning the 21st century laid the foundation and measuring competence to order Orther Thingking Low Skills (LOTS) towards Orther Thingking Higher Skills (HOTS).

Science is the study of the universe, the objects on the surface of the earth, in the bowels of the earth and in space, both of which can be observed senses and which can not be observed by the senses. IPA or faulty science is the science of both living creatures and inanimate objects were observed [2]. Learning science has a very broad relationship associated with human life. Learning science has an effort to generate interest and the human ability to develop Science and Technology (Science and Technology). Learning science is supporting the delivery of the development of the information and communication technology. Way of learning that is needed today to prepare students to be literate science and technology, personal character development or human, to optimize its development into a better and ready to face the challenges of the future in the 21st Century.

Learning science really helps students to understand all kinds of natural phenomena. Today, the science teaching in secondary school (SMP) has undergone several changes, among which the scope of learning science previously separated by respective disciplines now developed into a discipline that will be able to broaden the students are integrated IPA. Integrated science teaching is preferable implementation at SMP / MTs, as it has several objectives: improving the efficiency and effectiveness of learning as well as increasing interest and motivation. This will be good for the development of competencies, not only the competence of knowledge but also social and spiritual competence will also be developed with an excellent [3] [4]. The concept of integrity in science teaching contained in the Basic Competence Core Competence and learning science. In the Basic Competence already integrated the concepts science of biological sciences, physics, and earth and space science (IPBA).

The 21st century is marked by the increasing development of science and technology in various fields of public life. Technology enhanced demand for innovative and creative teachers in the media that will be used in the learning process [5]. Teachers should be able to adjust the learning activities in the classroom by using model in accordance with the demands of the government, using the student worksheet provided by the school, as well as the occasional accompaniment of using instructional media interest student learning to help students have a mindset that is critical in the face the challenges of the 21st Century learning [6].

Learning media is very necessary to prepare teachers to support the delivery of learning materials. It means teachers need the media aide to effectively communicate with students in the learning process [7]. One study used media teacher in the 21st Century is a textbook [8]. And one of the textbooks used in junior high school science teaching is the book of Integrated Science teacher who has provided the central government as a handbook teacher who became a textbook of learning resources in the school. The book is a learning resource teacher provides materials and learning scenarios. Therefore, teachers should use this book while other learning resources of its supplements [9]. With the demands of 21st century learning,

In addition to integrating 21st century skills learn some vital lessons, teachers should integrate the concept of books, ideas and topics and skills so that learners fully understand the competence to implement the integrated study [10]. Books existing integrated science teacher should use one of three types of learning appropriate to be developed in the Integrated Sciences in Indonesia's education level, the type of integrated (coherence) [11]. Integrated learning can be packaged with the theme or topic of a discourse that discussed various aspects of the field of study that is easy to understand learners [12].
The theme is taken in this study is about the theme of Energy in Life may be discussed in terms of energy and sources of energy (physics), digestion (biology), the material and its nature (chemistry).

Quality a product in this case is a book teacher Integrated Sciences is determined by the validity. Validity indicates the extent to which a measuring instrument is able to measure what you want measured. This means that the instrument used to measure what should be measured [13]. Validation tests can be carried out by experts and users (teachers) [14]. Product validation can be done by experienced experts to assess the weaknesses and strengths of the product.

Validity refers to the design of interventions based kebaharuan science (content validity), and the various components of interventions related to one another (construct validity) [15]. So, the book Integrated Science teachers have valid criteria when they describe the curriculum expectations, that the components of the Integrated Science teacher books that show content validity and construct validity. Content validity with respect to the content and format of the book Integrated Science teacher developed, while the construct validity with respect to the structure and characteristics of the book Integrated Science teacher developed. In addition to content validity and construct validity, it is also necessary to test the validation language to see the use of the language used in the book Integrated Science teacher in accordance with the correct spelling.

Validity analysis based validation sheet. Sheets validation Integrated Science teacher books are used to determine the validity of the Integrated Science teacher book developed. This validation sheet using a questionnaire in the form of a list of questions. This validation questionnaire filled out by teachers and lecturers with predefined criteria developed lattice validation and validation by expert media and languages.

The following product validation indicators that will be used in the development of Integrated Science teacher book-type integrated with the energy theme in the lives of local content based Sijunjung area to improve the skills of the 21st century, namely; a) the feasibility of the content includes; compliance with core competence and basic competence, suitability to the needs of teachers and learners, suitability to the needs of teaching materials, the truth of the material substance, the benefit to the addition of the insight, and conformity with the 21st century skills b) linguistic include; readability, clarity of information, compliance with the rules of Indonesian, and use language effectively and efficiently. c) The presentation includes; the order of presentation, motivation, interactivity (stimulus and respond), and completeness of the information. d) see the teacher guide includes;

Use of Integrated Science teacher book learning is a matter of serious concern that the implementation of an integrated science teaching can be accomplished with a maximum. In this case the required books Integrated qualified science teachers in order to help improve the competence and performance of teachers to plan and manage learning that educate and facilitate learners especially in mastering 21st century skills Therefore, before development, Integrated Science teacher book that will be developed need to be evaluated by testing validation. Validation is performed to determine whether the type of Integrated Science teacher book integrated with the energy theme in the lives of local content based Sijunjung area to improve the skills of the 21st century has been either used or whether there are still things that need to be repaired.

2. Research Methods
The case study of this research is a descriptive study with qualitative approach. Pdescriptive enelititn not intended to test specific hypotheses. Descriptive research is a form of studies aimed to describe phenomena that exist, whether a natural phenomenon or man-made phenomenon. The phenomenon can be a form of activity, characteristics, changes, relationships, similarities, and differences between the phenomena with each other phenomena. Descriptive research can produce a picture of the phenomenon under study, describes the processes that occur and present a variety of important information about the variable.

In this study, the data collected in the form of numbers are interpreted in the form of description. Design of the book is given to the expert validator for validation. Validation is a process to assess
whether the design of the product is worth it or not to use. Validator experts considered to have expertise in feasibility content, construct, linguistic and Graphical. The study also involves validator practitioners. The steps performed to validate the teacher books are: a. Set the validation sheet grating; b. Develop validation sheet; c. Validation sheet validator validates the expert; d. Fixing sheet validator validation in accordance with the advice of experts; e. Integrated Science teacher book validates the validator experts and practitioners to identify the strengths and weaknesses of the book the teacher; f. Analyzing the results of the validation sheet filled out by the validator; and g. Doing revised in accordance with suggestions / feedback from the validator until the product is considered valid and meet the suggestions of the validator.

The data analysis technique used is a Likert scale. Likert scale can be used to measure the opinion or perception of a person or group of events or social phenomena by using a questionnaire. Weights and measures is to give a question to a respondent and then asked to give an answer of choice answers, where the value of the answers have values different answers [16].

Validation instrument teacher used the book in the form of a questionnaire. Instrument validation prepared using a Likert scale of 1-4 with 1 = disagree term (0% - 25%), 2 = disagree (26% - 50%), 3 = agree (51% -75%), and 4 = strongly agree (76% -100%). Rate validator to each - each statement is analyzed by using the formula Aiken's V , which at the end of the processing is obtained:

\[
V = \frac{\sum s}{n(c - 1)}
\]

Information :

\[s = r - lo\]
\[lo = \text{lowest figure validity assessment (in this case} = 1)\]
\[c = \text{highest figure validity assessment (in this case} = 4)\]
\[r = \text{The figures given by the validator}\]

Integrated Science teacher guide that was developed considered valid if it has reached the interval in the category ≥0.61 valid [17].

The questionnaire was rated first by the expert validator according to predetermined criteria that the results are shown in Table 1. Validation instruments have valid criteria as shown in Table 1. The instrument is used as a reference in assessing the type of Integrated Science teacher book integrated with the theme of energy in life Sijunjung area-based local content to improve the skills of the 21st century.

Table 1. The results of the validation instrument ratings

| Aspect                                | V    | Criteria |
|---------------------------------------|------|----------|
| Clear sentences                       | 0.89 | valid    |
| based on indicators                   | 0.89 | valid    |
| based on the objective                | 0.89 | valid    |
| Does not contain a double meaning     | 0.89 | valid    |
| Simple and easy to understand         | 0.89 | valid    |
| In accordance with Indonesian Spelling is good and right | 0.89 | valid    |
| **Average**                           | **0.89** | **valid** |

3. Results and Discussion

Validation was carried out based on the theory feasibility teacher book. Validation of books teachers who developed the theme of energy in the life of local content-based, involving three experts and two validator validator practitioners. Validator experts consisted of two lecturers who have an educational
background in science education and one lecturer who possess educational background in Indonesian. While practitioners validator consists of two seventh grade science teacher at SMPN 1 Sijunjung.

Assessment of Integrated Science teacher books validity of the type integrated with the energy theme in the lives of area-based local content Sijunjung done using a validated assessment instrument before. Validation of Integrated Science teacher guide includes four components, namely components feasibility assessment content, construct components, linguistic components, and components Graphical.

Assessment conducted by three validator experts produce a valid criteria for the four components as shown in Table 2.

| Component         | Value Validation | Criteria |
|-------------------|------------------|----------|
| Feasibility of Contents | 0.82             | valid    |
| Construct         | 0.83             | valid    |
| Linguistic        | 0.87             | valid    |
| Graphical         | 0.78             | valid    |
| **Average**       | **0.83**         | **valid**|

Based on Table 2 can be seen that the teacher developed the book is valid in terms of the feasibility component content, construct, linguistic, or Graphical. However, there are some suggestions given by experts and need to be repaired. Of the components of the content, the book Integrated Science teachers will be developed need to be clarified further in the integration of the teacher books, both material and learning activities. Of the components of the construct, map concepts presented should be clearer description. Judging from the language component, in the writing of the book The Integrated Science teachers should be guided by the Indonesian spelling is good and right. Graphical of components, which need to be considered is the clarity of the picture.

Assessment of practitioners are teachers who are implementing science learning in SMPN 1 Sijunjung also get a valid criteria for the four components as shown in Table 3:

| Component         | value Validation | Criteria |
|-------------------|------------------|----------|
| Feasibility of Contents | 0.93             | Valid    |
| Construct         | 0.88             | Valid    |
| Linguistic        | 0.88             | Valid    |
| Graphical         | 0.89             | Valid    |
| **Average**       | **0.90**         | **Valid**|

Based on Table 3 can be seen that according to the book of teachers developed practitioners also valid in terms of the feasibility component content, construct, linguistic, or Graphical. However, there are also some advice given by practitioners and need to be repaired. Things need to be improved as well as the advice given by the experts. Of the components of the content, the book Integrated Science teachers will be developed need to be clarified further in the integration of the teacher books, both material and learning activities. There are still some material that is not contained in the book.
Integrated Science teacher in accordance with the theme of Energy in Life. Of the components of the construct, map concepts presented should be clarified. Judging from the language component, in the writing of the book The Integrated Science teachers should be guided by the Indonesian spelling is good and right. Language learning presented in the media can help engage students in constructing their own knowledge, and problems designed to help students apply the knowledge they have built [18]. Graphical of components, which need to be considered is the clarity of images and writings. So, book the Integrated Science teacher still needs to be improved to produce a book of qualified teachers.

Based on the tables above, it can be seen that all four components have been included in the valid criteria. Overall assessment validity Integrated Science teacher book-type integrated with the energy theme in the lives of local content based Sijunjung area to improve the skills of the 21st century can be seen in Table 4:

| Table 4. The average value Validation |
|--------------------------------------|
| **Validator** | **Average Value Validation** | **Criteria** |
| Expert | 0.83 | valid |
| Practitioners | 0.90 | valid |
| Average | **0.87** | valid |

Based on Table 4 above can be seen as a whole that the validity of the type of Integrated Science teacher book integrated with the energy theme in the lives of local content based Sijunjung areas to improve their skills in the 21st century entrance valid criteria. Nevertheless, it still needs a revision of some of the inputs provided by experts and practitioners for the improvement of the development of Integrated Science teacher book-type integrated with the energy theme in the lives of local content based Sijunjung area to improve the skills of the 21st century do.

Integrated Science teacher book integrated type is assessed using a Likert scale with category 1 = Disagree; 2 = disagree; 3 = agree; and 4 = strongly agree. Then, the results of this assessment were processed using the formula Aiken’s V this. Figure 1 below shows the overall results of the validator validator assessment experts and practitioners from the four aspects of the assessment:

![Figure 1. Validation Assessment by the teacher guide Validator and Validator Expert Practitioners](image-url)
Based on the graph shows that the difference in assessment experts and practitioners results are not so striking, four aspects (feasibility content, Construct, linguistic and Graphical) almost look alike. In the graph it can be seen that the value - average Aiken's V each aspect by the practitioner validator higher than validator expert. This difference occurs because the validator experts better understand the aspects of the content and validators practitioners better understand the needs on the ground conditions.

4. Conclusion
Based on these explanations, Integrated Science teacher validating book-type integrated with the energy theme in the lives of local content based Sijunjung areas to improve their skills 21st century has fulfilled materials development patterns in accordance with the characteristics of good teaching materials. It also means the book-type Integrated Science teacher integrated with the energy theme in the lives of local content based Sijunjung area to improve the skills of the 21st century has met the validity of components that include feasibility content content, Construct, linguistic and Graphical. Thus, Integrated Science teacher book-type integrated with the energy theme in the lives of local content based Sijunjung area to improve 21st century skills can be tested in the study.

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