Validity of integrated natural science teacher’s book with immersed type that contain character on subject of bio-electrical energy by using science process skills approach

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Abstract. The learning of integrated science in SMP/MTs is supported by the resources of the student’s book and teacher’s book. The teacher’s book is guide for the teacher in learning preparation, implemention, and assessment. The aim of this research is to know the validity of Integrated Natural Science (IPA) Teacher’s Book with Immersed Type that Contain Character on Subject of Bio-Electrical Energy by using Science Process Skills Approach. The kind of this research is Research and Development with using research Plomp model. The instrument of the research is the observation sheet in the form of teacher validation questionnaire. The data analysis is descriptive using Likert scale technique. The result of the research shows that the Teacher’s Book with Immersed Type that Contain Character on Subject of Bio-Electrical Energy by using Science Process Skills Approach which is valid category (0.78) by expert and by practitioner.

1. Introduction
IPA is a science that deals with natural phenomena and systematic properties are arranged regularly, generally applicable in the form of a collection of observations and experiments, it means that the knowledge is arranged in a system, not stand alone with each other interrelated and become one unified whole [1]. IPA study at junior high school / MTs applies integrated science learning based on Permandikbud No. 68 Year 2013 states that science lessons of SMP / MTs are developed as integrative subjects of applied-oriented science, the development of thinking ability, learning ability, curiosity, caring attitude, and responsibility to the natural environment.

The reality in the field shows that science learning that is expected by the 2013 curriculum is integrated science learning has not run maximally. Most teachers have not yet practiced an integrated IPA learning model and have difficulty in designing integrated science learning in learning in terms of physics, biology and chemistry. So that impact on the learning outcomes of learners who are still difficult to immerse ideas about the concepts of integration between physics, biology and chemistry.

One integrated model that can be applied to science learning that can help students to immerse ideas about the concepts of integration between physics, biology and chemistry is the immersed model or embedding. Immersed integrated learning model is a learning that is designed so that each individual can combine all the data from several fields of science and generate thoughts according to the field of interest [2].
In the 2013 curriculum in the learning process in addition to mastering science, learners are also expected to be human beings with character. This character development is developed due to the emergence of problems in society such as corruption, violence, sexual crimes, vandalism, mass fights, consumptive economic life, unproductive political life, and so on which are topics of warm discussion in mass media, seminars and on various occasions. One alternative to solve this problem is to include the value of character in education [3].

Integrated science learning in SMP is accomplished with the theme and relevant learning resources [4]. Themes are needed to integrate between Physics, Biology and Chemistry. The theme chosen adapted to the characteristics of students who are close to everyday life, so chosen theme of electrical energy of living things. In essence, students must be able to build their own learning concepts in order to relate the facts that occur with science learning. The learning process of IPA is not only a process of transferring the teacher's experience to the students, but it is a process to explore and find something as an experience for the students so that students can see the immediate events around and direct experiment conducted by the students. One of the steps to improve students' learning comprehension is by developing the science process skills in learning [5].

In Curriculum 2013 teachers are required to be able to develop their own learning resources. Learning resources is something that is available in the learning environment that serves to help the learning process for both teachers and students. One of the learning resources that teachers and students often use is books.

Based on the Regulation of the Minister of Education and Culture No. 8 of 2016 on textbooks states that there are two types of books used as reference textbooks in learning, namely student books and teacher books. Student book is a student handbook to achieve learning objectives and competencies. The teacher book is a teacher handbook that contains learning strategies, learning methods, instructional techniques and assessment for each subject or learning theme.

Viewed from the aspect of its utilization in learning process, student’s book and teacher’s book is one unity in learning process. Teacher's books are developed to support the implementation of student books. In other words, the teacher's book is used as a guide in the use of student books. In addition to students using manuals, teachers also need to have guidelines for the implementation of learning. In relation to that, textbooks for students have been developed from previous research by Yuni Anggiya (2017), an integrated textbook of science type immersed-type subjects characterized on the theme of electrical energy of living beings with a skill approach to the science process. The book of students who have developed it can be said to have fulfilled the suitability of the students' learning textbooks, but the teacher's book in accordance with the theme does not yet exist.

The 2013 curriculum states that teachers’ books need to support students' books on the learning process. In fact, many teachers using guidebooks are not in line with the books that the students use. Therefore, to facilitate the teacher in using the book of students it is necessary to develop a book of teachers in accordance with the theme as a guide the implementation of learning activities in the classroom. In relation to the facts there is formulated a problem of this research is how the validity of textbook science teacher integrated immersed type charged characters on the theme of Bio-electrical energy with the approach of science process skills.

2. Research Methodology
This research is a descriptive research that aims to find out the level of validity of integrated science teacher books of immersed type charged characters on the theme of Bio-electrical energy with a scientific process skills approach. Data obtained from the response of 3 experts who are Lecturers of State University of Padang and 2 people who are the teachers IPA SMPN 1 Tambusai. Data were collected through questionnaires filled by experts and practitioners, after the data were obtained, analyzed using Aiken's formula:

$$V = \frac{\Sigma s}{n(c-1)}$$  \hspace{1cm} (1)
Where: \( s = r - lo \) (\( r = \) The number given by an appraiser), \( lo = \) The lowest validity score (in this case = 1), \( c = \) The highest validity score (in this case = 4) and \( n = \) Number of appraisers.

The category of product validity obtained can be seen in Table 1. The developed book is said to be valid if it has reached the interval \( \geq 0.6 \).

| Achievement | Category |
|-------------|----------|
| \( \geq 0.6 \) | Valid    |
| < 0.6       | Invalid  |

(Azwar, 2015) [4]

### 3. Results and Discussion

The book was conducted by 5 validators consisting of 3 experts who are Lecturers of State University of Padang and 2 practitioners who are science teachers of SMP N 1 Tambusai. The results obtained from this research is an integrated science textbook teacher type immersed characterized on the theme of electrical energy of living beings with a valid approach to science process skills developed. This can be seen in the Table 2.

| No | Aspect | Average | Criteria |
|----|--------|---------|----------|
| 1  | Content Validation | 0.83 | Valid |
| 2  | Construct Validation | 0.82 | Valid |
| 3  | Language Validation | 0.70 | Valid |
|    | Average | 0.78 | Valid |

The result of validation of integrated science textbook of immersed type is characterized on the theme of Bio-electrical energy with the approach of science process skill assessed by the validator in Table 2 can be seen on average in general is 0.78 is in valid criterion. From the assessment of content validation aspects obtained an average of 0.83 are on valid criteria. Aspects of content validation are the material presented in the book of teachers is in accordance with the demands of KI, KD and Indicator formulated, the mapping of learning activities and competencies to be developed, indicator achievement learners clearly mentioned in each chapter, the purpose of learning is clearly stated in each chapter, the facts in the presentation of the problem fit the topic on the material. The teacher's book is presented in accordance with the truth of science, the teacher's book has a renewed knowledge for the reader, the theme of the electrical energy of living beings on the teacher's book in accordance with the material, the theme of Bio- the electrical energy creatures in the teacher's book adds to the reader's knowledge, the enrichment on the teacher's book is already relevant to the material discussed, learning activities contained in the book of teachers according to the model of learning Based Project (PBI), learning activities in the teacher's books in accordance with the approach of science process skills, teacher books contain activities that can motivate learners to be religious, discipline, responsibility, curious, communicative and confident, the evaluation question is in accordance with the indicators of learning.

The average value of the construct validation is 0.82 to be in valid criteria. Aspects of construct validation are teacher books arranged in accordance with the applicable teacher book structure, teacher book structures are related to each other, the material in the teacher's book is clearly illustrated on the concept map, the steps of the Model Based Learning Project (PBI) are drawn clearly in the teacher's book, the judgments (Attitudes, knowledge and skills) contained in the teacher's book are easy to understand, references to the teacher's books are listed in the bibliography, the general elucidation of the teacher's clear and easy-to-understand guidance.
The average language validation value is 0.70 to be on valid criteria. Aspects of language validation are the languages used both correctly and correctly according to Indonesian grammar, the language used to inspire teachers, the language used is easy to understand and does not have a double meaning, consistent in the use of terms, consistent in the use of symbols or symbols, spelling used refers to the EYD, the information conveyed in the teacher's book is clear, the writing of the scientific name / foreigner in the teacher's book is correct, the term used in accordance with the Great Dictionary of Indonesian Language.

The validation results indicate that an integrated textbook of immersed type IPAs characterized on the theme of Bio-electrical energy with a scientific process skill approach has been declared valid by the validator.

4. Conclusion
Based on the result of validation done, the average total value is 0.78 with valid criterion, so it can be concluded from this research that the textbook of integrated science teacher of immersed type has character on the theme of Bio-electrical energy creature with approach of science process skill is valid. As for suggestion in this research is book of teacher from result of this research can be made as consideration of teacher in developing teaching materials as effort to improve the result of the students’ value and understanding in the school.

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