Universitas Muhammadiyah Malang, East Java, Indonesia

JPBI (Jurnal Pendidikan Biologi Indonesia)

p-ISSN 2442-3750, e-ISSN 2537-6204 // Vol. 6 No. 1 March 2020, pp. 135-146

Research Article

The biological content accuracy of natural science textbooks for VIII grade

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ARTICLE INFO

Article history
Received January 07, 2020
Revised February 12, 2020
Accepted February 20, 2020
Published March 31, 2020

Keywords
Biological content accuracy
Govermental publisher
Private publisher
Natural science textbook

ABSTRACT

The properness of concepts, principles, and biological contents of natural science textbooks is essential. The aim of this research was to compare the biology content of natural science textbooks for VIII graders in second semester. The indicators used to determine the properness were the accuracy of Core Competence/CC and Basic Competence/BC, concept, principle, illustration, and word editing. The textbooks analyzed were those which published by Indonesian Ministry of Education and Culture (government) and private publisher. The sample of this qualitative descriptive research was three natural science textbooks which applied Curriculum 2013. The research procedure referred to Milies and Huberman. The results showed that the properness percentages of CC and BC of science textbook published by governmental and private publisher were 86.25% (excellent) and 74.28% (good) respectively. There were inaccuracy of 11 concepts, 1 principle, and 5 illustrations found in the textbooks published by governmental. Furthermore, there were 5 inaccurate concepts found in the textbook published by private publisher. Moreover, there were 37 typographical errors found in the Natural Science Textbooks published by government and none found in the book published by private publisher. Therefore, the textbooks published by private publisher is better than those which by govermental publisher.

How to cite: Candra, P. M., Mercuariani, I. S., Nugroho, E. D., & Vlorensius, V. (2020). The biological content accuracy of natural science textbooks for VIII grade. *JPBI (Jurnal Pendidikan Biologi Indonesia), 6*(1), 135-146. doi: https://doi.org/10.22219/jpbi.v6i1.10837

INTRODUCTION

Textbooks are important teaching materials for delivering curriculum content, but not all textbooks have the same purpose and content in delivering curriculum messages. The selection of the right textbook is one of the things that can determine success in the learning process (Risma, Rahmayani, & Handayani, 2019). They are set up aimed at the promotion of specific curriculum visions (Okeeffe, 2013). One of the fundamental changes in the Curriculum 2013 is the book it uses, which is a book for students and teachers, unfortunately this change also provides its own challenges for publishers, so it must meet the demands of its curriculum. According to Juwita, Ilmiyati, and Maladona (2017), the textbook is important to improve the quality of education, so the textbook must be in accordance with the curriculum.

The provision of Curriculum 2013 textbooks is indeed provided by the government and is distributed and used by some schools, both in the form of student textbooks and teacher textbooks. However, there are many inappropriate student textbooks used in teaching and learning in schools such as content that is out of sync with the environment of students (Behnke, 2018; Mariani & Usmeldi, 2019), inaccuracies in the material and even overlapping is often a problem (Chavan & Patankar, 2018; Wernecke, Schwanewedel, & Harms, 2018). Research results Juwita et al (2017) and Nugroho, Vlorensius, Rasidah, and Anisa (2017) there are still many material concepts found in the textbook that are not appropriate, causing misperceptions in the teaching and learning process. Many studies have examined the diagnosis of conceptions, misconceptions have been established as consistent causes of scientific concepts by many students (Queloz, Klymkowsky, Stern, & Hafen, 2017; Vojíř & Rusek, 2019).

The Curriculum 2013 textbooks have been provided by the Indonesian Ministry of education and culture. Private publishers also provide textbooks, especial natural science textbooks for VIII grade of junior high school. Based on teacher interviews at the school in Tarakan city (North Kalimantan Province), the main natural science textbooks for eighth grade of junior high school are used natural science (textbooks published by Ministry of Education and Culture of Indonesia and private publishers).

The natural science textbook has been assessed by the National Education Standard Agency (or *Badan Standar Nasional Pendidikan/BSNP)* before published. The national education standard agency will publish selected books through improvement. The textbook assessment by BSNP is the components of content suitability, presentation, linguistic, and graphic. Each component consists of sub-components with detailed assessment points. Although the textbook has been assessed by BSNP, there are some that should not be presented in the textbook. Nugroho et al., (2017) states that there are concepts and illustrations that are not accurate in natural science textbooks.

Researcher has found an inaccuracy in the preliminary observation between the picture and caption, so that a review of the textbook was needed. The points of the assessment are less but clearly detail the strengths and weaknesses based on various authentic sources of reference.

Preliminary observations of the natural sciences textbook published by the ministry of education and culture, there is a discrepancy in the description of the picture of human blood circulation from reference sources. The illustration in the natural sciences textbook presented in Figure 7.6 are the large and small circulatory circuits listed on page 10. The picture caption shown on number 9 is the vena cava anterior and the image description shown on number 10 is the vena cava posterior.

The correct image description at number 9 is the superior vena cava and the image description at number 10 should be the inferior vena cava. That's because the circulatory material presented is blood circulation in humans. Blood flow in humans flows towards the top (superior) or downward (inferior) in the anterior body plane as presented in the natural sciences textbook.

Based on the description above, the purpose of this study is to compare the suitability of the biology content in textbooks based on Core Competencies *(Kompetensi Inti/KI)* and Basic Competencies *(Kompetensi Dasar/KD)* and found the inaccurate of concept, principle and illustration of biology content in textbooks VIII grade second semester Curriculum 2013 was published by Ministry of Education and Culture of Indonesia and EG. The results of this study are expected to improve the content of natural science textbook for VIII grade in the second semester. Besides the results of improvement are very important to be applied in teaching and learning activities so that students' understanding is not wrong up to the level of higher education.

METHOD

The method of this research is qualitative descriptive. This research aims to systematically describe facts and characteristics of biology content in natural science textbook published by the Ministry of Education and Culture of Indonesia and private publisher (EG). Data analysis uses qualitative analysis. Qualitative data analysis uses words arranged into a description text) (Ghoni, Djunaedi & Fauzan, 2013). The process of analyzing Miles and Huberman's model data includes data collection, data reduction, data presentation and conclusions (data verification). Components data analysis of Miles and Huberman's Model (Interactive model) is presented in Figure 1.

The subjects of this study were the natural science textbook published by the Ministry of Education and Culture of Indonesian and private publisher. In the list is presented in Table 1, the natural science textbooks for VIII grade in the second semester used in Tarakan city.

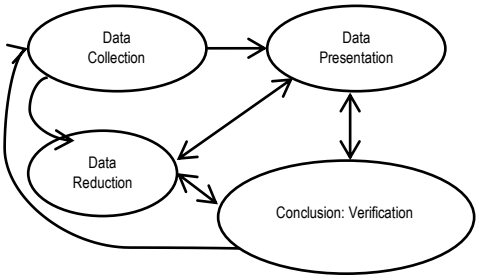

Figure 1. Miles and Huberman's model; Components in data analysis (Interactive model)
(Source: Sugiyono, 2014).

Table 1. The list of natural science textbooks for 8th grade in second semester used in Tarakan city

No	List of schools		Book publisher
1	Junior High School 1 of Tarakan	-	Ministry of Education and Culture of Indonesia
2	Junior High School 2 of Tarakan	-	Ministry of Education and Culture of Indonesia EG (Private publisher)
3	Junior High School 3 of Tarakan	-	Ministry of Education and Culture of Indonesia

The sampling technique uses purposive sampling because this book consists of chemistry, physic, and biology that are specialized in biology, also most widely used by junior high schools in the Tarakan city. The technique of data collection is interview and documentation. Interviews were conducted between researchers and science teachers VIII grade of junior high school to find out the science textbook used in the Tarakan city. The interview technique used structured interviews. Documentation is used to photograph explicit inaccurate in textbooks and reference sources.

The process of reducing data in this study is to sort out the data needed for research. Researchers sort out Basic Competencies related to biology content in syllabus. Researchers was organized specific content and sub content that discuss biology content in natural science textbook for VIII grade second semester. Researchers present data in narrative text, data analysis tables and charts. Data is presented from the results of the analysis in depth and based on the reference sources used in the research. The conclusions in this study to answer the problem and new findings during the study.

The instruments used were interview sheets and observation sheets which had been validated by expert lecturers. Data credibility testing by using triangulation and member checking by two expert lecturers. The percentage of Core Competencies and Basic Competencies assessments and texbook component assessment is obtained from the suitability percentage in Formula 1. Research Results Category is presented in Table 2.

$$Percentage\ of\ suitability = \frac{total\ score\ of\ answer}{maximum\ score} X100\% \quad (1)$$

Table 2. Research results category of core competencies and basic competencies assessments

Percentage (%)	Quality
85-100	Excellent
65-84	Good
55-64	Fair
40-54	Poor
0-39	Very poor

Source: (Yusmium, 2015).

RESULTS AND DISCUSSION

The analysis of content suitability for core competencies and basic competencies

The content of natural science textbook published by Indonesian ministry of education and culture 1st edition, year 2014 and revised edition, year 2014 are same so the researcher only examines one of them. The competencies analyzed are Core Competencies 1-4 and Basic Competencies of 3.8, 3.9, 3.10, 3.11, 4.8, and 4.9. The analysis of content suitability for Core Competencies and Basic Competencies from textbook published by Ministry of Education and Culture of Indonesia (Book title: *Ilmu Pengetahuan Alam* [Natural Science]) are presented in Table 3 and the analysis of content suitability for Core Competencies and Basic Competencies from textbook published by EG (Book title: *IPA Terpadu* [Integrated Science]) are presented in Table 4.

Table 3. Analysis results of content suitability for core competencies and basic competencies published by Ministry of education and culture of Indonesia

Core Competencies	Percentage of suitability (%)	Incompatibility
Core Competency-1	100	-
Core Competency-2	95	The social attitudes that show respect for others in daily activities are not instructed of texts in natural science textbook. Teachers can apply these social attitudes through teaching, learning and experimentation in the class.
Core Competency-3 consists of: Basic Competency-3.8 Basic Competency-3.9 Basic Competency-3.10 Basic Competency-3.11	90	The osmotic pressure content was not presented in natural science textbook. Teacher can use other references relevant to explain osmotic pressure content based on factual data.
Core Competention-4 consists of: Basic Competency-4.8 Basic Competency-4.9	60	Basic Competence of 4.8 was not presented in the textbook. Content of basic competence of 4.8 is an experiment investigating the transport of fluids in plant stems. The experiments investigating fluid transport in plant stems can be presented by the teacher using other relevant reference sources or presenting skills-based on factual or contextual data.
Average of percentage	**86.25 (Excellent)**	

Table 4. Analysis results of content suitability for core competencies and basic competencies published by EG

Core Competence	Percentage of suitability (%)	Incompatibility
Core Competency-1	50	The persuasive texts which describe spiritual attitudes was not full presented in the book. The teacher can guide students to implement spiritual attitudes through teaching, learning and experimentation in the class.
Core Competency-2	80	The social attitudes that show respect for individual and group work in daily activities are not instructed of texts in natural science textbook. Teachers can apply these social attitudes through of showing appreciation in learning.
Core Competency-3 consists of Basic Competency-3.8, Basic Competency-3.9, Basic Competency-3.10, Basic Competency-3.11	90	Basic Competence of 3.11 is not presented in textbooks. The process of shading the eyes of insect's content was not presented in natural science textbook. Teacher can use other references relevant to explain osmotic pressure content based on factual data.
Core Competention-4 consists of: Basic Competency-4.8 Basic Competency-4.9	60	Basic Competence of 4.9 was not presented in the textbook. Content of basic competence of 4.9 is a skill to make mind mapping about the structure and function of excretion system in humans. The skill to make mind mapping about the structure and function of excretion system in human can be presented by the teacher using other relevant reference sources.
Average of percentage	**74.28 (Good)**	

Core Competencies are designed into four interrelated groups. Spiritual attitude (Core Competencies-1), social attitudes (Core Competencies-2), knowledge (Core Competencies-3), and application of knowledge or skills (Core Competencies-4). The persuasive texts which describe spiritual attitudes was not full presented in the book published by EG while the persuasive texts which describe spiritual attitudes full presented in the book published by Indonesian ministry of education and culture. The spiritual attitude of the textbook must refer to the Core Competencies and Basic Competencies, for attribution of patterns, attitude competencies are included in all activities through all stages of the scientific approach in the book (Arifah & Santosa, 2018). The persuasive texts which describe spiritual in textbooks can guide students to express the spiritual values that are owned by students and manifested through student behavior. Teacher's books and student books are composed by various parties under the coordination of education and culture ministries, books are constantly updated, accordingly with the dynamics of needs and changes of time (Medriati, Irawati, & Ekaputri, 2018).

Besides, the spiritual attitude in textbooks can implement one of the objectives national educations in Law of Republic Indonesia Number 20 Year 2003 Article 1 to develop student's self-potential to have spiritual strength. Spiritual attitude is an important element of student development. If students want to develop this capacity fully, teachers must provide opportunities to reflect on their experiences, emotions, and beliefs. It can

happen if teachers train to encourage and guide reflection on their students (Boone, Fite, & Reardon, 2010). Teachers can guide students to implement spiritual attitude in learning.

The social attitude in basic competence 2.4 not presented in the textbook published by the Indonesian ministry of education and culture and EG. Basic competence 2.4 is an award to others in daily activities. Appreciation for students can be a motivation to repeat learning activities that have been done by students. The implementation of reward affect positive for students, become more excited and the classroom atmosphere is more competitive in learning activities (Syawaludin & Marmoah, 2018). A positive response to understanding the concept of science must be supported by good media, so students can visualize their learning (Rahmiwati, Ratnawulan, & Yohandri, 2018). Spiritual and social attitude competencies are taught indirectly learning (Ariantini, Suandi, & Sutama, 2014; Syihabuddin, 2017). Therefore, the teacher can guide students to show appreciation to others in teaching and learning activities.

Basic Competence 3.8 is not presented in the textbook published by Indonesian ministry of education and culture. Basic Competence 3.11 is not presented in the EG book. Basic Competence 3.8 and 3.11 contains factual and conceptual understanding of a Natural Science textbook. Basic Competence becomes the foundation to developing content, learning activities and indicators of competency achievement. Basic Competence can be achieved through learning activities as a student learning experience. Competencies are developed and pedagogical approaches are used; testing and validation tools and evaluation processes for sustainability competencies for better education (Cebri, Junyent, & Mul, 2020). Basic Competence 4.8 is not presented in the natural science textbook published by Indonesian ministry of education and culture is an experiment investigating the transport of fluids in plant stems. Basic Competence 4.9 is not presented in the natural science textbook published by EG is the skill of making mind mapping about the structure and function of excretion systems in humans.

Core Competencies-4 is competency of contextual learning to application the knowledge. Application of knowledge or skills (Core Competencies-4) can be obtained through learning experiences. Activities that can be done by students to conform basic competencies that have not been presented in textbooks are conducting experiments, researching, finding, observing, studying and other activities that can provide meaningful experiences for students. Learning experiences must be activities that can encourage students to be able to live and experience themselves so that they are meaningful, the potential of the textbook must always be evaluated, and not only the pedagogical design but the textbook must also pay attention to the effectiveness of learning (Gu, Wu, & Xu, 2015). Teachers can try to understand and support student through collaborative learning experiences (Darling-Hammond, Flook, Cook-Harvey, Barron, & Osher, 2019).

At present, learning in the 21st century is experiencing changes marked by the development of knowledge, so that the synergy between them is becoming faster (Boholano, 2017). Partnership for 21st-Century Learning (P21) develops learning frameworks in the 21st-Century that require students to have skills, knowledge and abilities in the fields of technology, media and information, learning and innovation skills as well as life and career skills (Cebri et al., 2020). Knowledge and skills can be developed through learning activities in schools. The 21st-century learning paradigm emphasizes the ability of students to find out from a variety of sources, formulate problems, think analytically, collaboratively and collaborate in solving problems of Thinking and Problem Solving, Creativity and Innovation, Communication, Collaboration. For this to happen, education systems need to be built upon strong, up-to-date curricula and to design classroom activity based on cutting-edge knowledge on what drives human learning (Branden, 2015).

Based on this, there is a correlation between Core Competencies-3 and Core Competencies-4. The knowledge obtained in Core Competencies-3 can be implemented in Core Competencies-4. The importance of activities in Core Competencies-4 can train the skills of students in this century Teachers can construct book content using valid references to supplement material not yet presented in textbooks.

The textbook component analysis of natural science for VIII grades

Presentation of the analysis results of the textbook component published by the Ministry of Education and Culture of Indonesia and EG is presented in Figure 2, which aims to illustrate the percentage of conformity of the components in the textbook to Basic Competence.

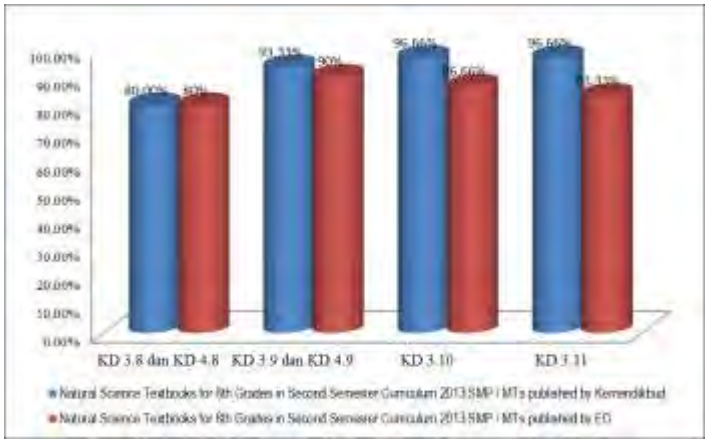

Figure 2. Percentage of textbook component suitability in Natural Science for VII Grades

Textbook components were analyzed divided into 3 components: systematics, description of material, and assessment of learning processes and outcomes. Systematics consists of chapter titles, subtopic sequences, presentations of scientific approaches to textbooks, authentic assessment. The description of the material consists of introduction to the chapter motivates students to learn, the scope of the material for each sub-topic or sub-chapter, activities in the book facilitate learning with a scientific approach. The assessment process and learning outcomes consist of assessment of knowledge, attitudes, skills and tasks.

Chapter titles are names used in book chapters to briefly imply the intent of a particular chapter. The chapter title describes the characteristics of the material that will be studied by students. Chapter titles in natural science textbooks subjects are not the same as chapter titles in other subjects. That is because science is a subject taught integrated biology, physics, chemistry, and the earth's space (Listyawati, 2012). The integration of science subjects is not only presented in the material in the textbook, but the integration of science must also be described in the chapter title, so teachers and students are able to implement integrative science learning for the success of the curriculum (Widiyatmoko, 2016). Implementation of the integrated textbooks SMP lecture-based character of the shared model as a medium of learning to understand the concept of science with better (Rahmiwati et al., 2018; Risma et al., 2019).

The other inaccuracy is subtopic in each chapter. In developing the teachers' competence and the teaching materials needed some strategies, basic competencies teaching contents in textbook must be arranged and ordered based on the relationship between one subject matter with another material as the mission of delivering the curriculum (Ruhiat, Hidayat, Suparno, Hasani, & Wibowo, 2016). Learning is more effective when ideas are conceptually connected to each other, thought involvement, and able to do tasks that can motivate (Darling-Hammond et al., 2019). Material ordering aims to present the main material based on the level of material difficulty. The presentation of material from the easy level to the difficult level and from the simple level to the complex level of a textbook, demonstrates effectiveness in designing systematic, gradual, and evaluable instructions that can enhance the learning experience developed (Dunlosky, Rawson, Marsh, Nathan, & Willingham, 2013; Khalil & Elkhider, 2016; Sidek, 2012).

The next inaccuracy is scientific approach in the natural science textbook. The series of activities based on the stages in the scientific approach (observing, asking, trying, reasoning, and communicating) not presented the stages in the scientific approach. The integrity of the implementation of the scientific approach in learning the curriculum 2013 is very important. Implementation in the scientific approach stage does not have to be carried out by the sequence of stages but can be done by the conditions that occur in learning (Rusilowati, Nugroho, & Susilowati, 2016). Therefore, the teacher plays an important role in managing the class carrying out scientific stages in a scientific approach.

Authentic assessment of students' attitudes, knowledge and skills comprehensively by adding attention to the social dimension of science carried out by the teacher and facilitated by the textbook (Ramnarain & Chanetsa, 2016). The discrepancy that occurs with the assessment is the assessment of attitude. Attitude assessment can be analyzed through activities presented in textbooks. The natural science textbook published

by EG does not present an attitude assessment instrument. Attitude assessment instruments can be developed by the teacher. Instruments in attitude assessment include observation, self-assessment, and peer assessment by students (Natalia, Asib, & Kristina, 2018; Seifert & Feliks, 2018). Assessment in science education, with a holistic approach will make science textbooks better and support the learning of valuable ideas and help teachers build their own content and pedagogical knowledge can be prepared (Chaisri & Thathong, 2014). Attitude assessment instruments can be analyzed based on students' attitudes during the implementation of the learning process.

The analysis of inaccurate concept, principle, illustration and typography of natural science

The results of the analysis of inaccurate concept (C) and principles (Pr) and illustration (I) of the natural sciences textbook for VIII grade in second semester curriculum 2013 junior high school published by the ministry of education and culture and EG are presented in Table 5 and Table 6.

Table 5. Analysis of Inaccurate Concept (C) and Principle (Pr) and Illustration (I) of Natural Science Textbook

No	Indicators	Page	Category		
			C	Pr	I
1	Caption	9			√
2	Caption	10			√
3	Definition	19	√		
4	Definition	19	√		
5	Definition	19	√		
6	Caption	22			√
7	Definition	36	√		
8	Definition	38	√		
9	Theory	40		√	
10	Definition	41	√		
11	Definition	41	√		
12	Caption	105			√
13	Caption	106			√
14	Definition	107	√		
15	Definition	107	√		
16	Definition	160	√		
17	Definition	162	√		
Total			**11**	**1**	**5**

Table 6. Analysis of Inaccurate Concepts (C) and Principle (Pr) and Illustration (I) of Natural Science Textbook

No	Indicator	Page	Category		
			C	Pr	I
1	Definition	253	√		
2	Definition	259	√		
3	Definition	261	√		
4	Definition	261	√		
5	Definition	261	√		
Total			5	-	-

The natural sciences textbook for junior high school published by the Ministry of Education and Culture of Indonesia contains 37 of typographical errors. Typographical errors marked with bold font presented in Table 7. The natural science textbook published by Ministry of Education and Culture of Indonesia and EG is presented have different inaccurate variations of concept, principle, and illustrations. The natural sciences textbooks for VIII grade in second semester Curriculum 2013 published by the Indonesian ministry of education and culture were found 11 inaccurate concept, 1 inaccurate principles, and 5 inaccurate illustration. Indicator of inaccurate concept found is a definition, indicators of inaccurate principle found are theoretical errors, and indicator of inaccurate Illustration found is image captions. There 37 typographical errors found in natural science textbook published by Indonesian ministry of education and culture. The natural sciences textbooks for VIII grade in second semester Curriculum 2013 published by EG were 5 inaccurate concept and none of principle and illustration are presented inaccurately in science textbook published by EG. There was not found typographical errors in natural science textbook components published by EG.

Table 7. Typographical errors in the of Natural Science Textbook published by Ministry of Education and Culture of Indonesia

No	Chapter	Page	Statement *(The book uses Indonesian language)*
1	7	6	***Tabel 7.2 Karakteristik jenis-jenis sel darah putih***
2	7	9	*Untuk memahami bagian-bagian jantung perhatikan* ***Gambar 7.5***
3	7	9	***Gambar 7.5*** *Bagian-bagian Jantung*
4	7	10	***Gambar 7.6*** *Peredaran darah besar dan kecil*
5	7	12	***Gambar 7.7*** *Rangkaian Alat Percobaan*
6	7	13	***Gambar 7.8*** *Rangkaian Alat Percobaan*
7	7	15	***Gambar 7.9*** *Rangkaian Alat Percobaan*
8	7	16	*Hasil pengukurannya terdiri atas dua angka, biasanya 120/80*
9	7	16	***Gambar 7.10*** *Sphygmomanometer*
10	7	17	***Gambar 7.11*** *Kondisi jantung penderita serangan jantung*
11	7	17	***Gambar 7.11*** *menunjukkan kondisi jantung penderita serangan jantung.*
12	7	17	***Gambar 7.12*** *Kondisi otak penderita stroke*
13	7	17	***Gambar 7.12*** *menunjukkan kondisi otak terutama pembuluh darah penderita stroke.*
14	7	18	***Gambar 7.13*** *Sistem pernapasan pada manusia*
15	7	18	***Gambar 7.13*** *menunjukkan susunan organ-organ dalam sistem pernapasan.*
16	7	18	*Selaput lendir sebagai perangkat benda asing yang masuk terhirup* ***sat*** *bernapas*
17	7	20	*Agar kamu dapat memahaminya, perhatikan* ***Gambar 7.14.***
18	7	21	***Gambar 7.14*** *Difusi gas pada sistem sirkulasi*
19	7	21	*Kapasitas* ***Paru-Ptaru***
20	7	22	***Gambar 7.15*** *Mekanisme pernapasan*
21	7	23	***Gambar 7.16*** *Kondisi bronkus penderita asma*
22	7	24	***Gambar 7.17*** *merupakan perbandingan antara paru-paru orang sehat dengan paru-paru penderita pneumonia*
23	7	24	***Gambar 7.17*** *Kondisi paru-paru normal (kiri) dan penderita pneumonia (kanan)*
24	7	24	*Penyakit ini disebabkan oleh infeksi bakteri* ***Bacillus tuberculosis*** *pada paru-paru.*
25	8	35	*Darah akan masuk ke dalam ginjal melalui* ***arteri besar*** *dan akan keluar dari ginjal melalui pembuluh* ***vena besar.***
26	8	38	*Urin sekunder bergerak ke tubulus* ***kontotus*** *distal dan juga di saluran pengumpul.*
27	8	38	*Berdasarkan gambar tersebut, kulit terdiri atas lapisan epidermis (kulit ari), dermis, dan* ***epidermis****.*
28	8	41	*Pengubahan dilakukan oleh sel-sel khusus yang disebut sel* ***histosit****.*
29	9	74	*Organ korti berisi* ***carian*** *sel-sel rambut yang sangat peka.*
30	10	109	*Sel kerucut mengandung pigmen iodopsin, yaitu senyawa antara* ***retina*** *dan opsin.*
31	10	110	***Gambar 9.32*** *Gambar huruf tokek untuk mengecek kelainan mata buta warna*
32	10	110	***Gambar 9.32*** *di atas, merupakan salah satu gambar yang dipakai untuk menguji buta warna.*
33	10	110	*Hal ini disebabkan oleh cacat lensa yag tidak dapat memberikan gambaran atau bayangan garis vertikal dengan* ***horisotal*** *secara bersamaan.*
34	11	153	*Krisanteum*
35	11	153	*Delion*
36	Glosarium	161	***Endotelim*** *lapisan sel pipih sederhana yang melapisi lumen pembuluh darah.*
37	Glosarium	164	***Rodopsin*** *pigmen pengelihatan yang tersusun atas* ***retina*** *dan opsin.*

Concepts in textbooks must come in the form of new ideas that can emerge as a result of thoughts, definitions, meanings, unique characteristics, and essence or content. According to Morales & Baker, (2018) the suitability of content, readability, and the ease of getting feedback when using text books can improve students' attitudes, attitudes, and behaviors towards learning. Textbooks largely determine not only what topics and ideas are taught in the classroom but also the way they are presented to students. Thus textbooks affect learning and teaching in many different ways (Behnke, 2018). The definition is part of the concept indicators of many inaccuracies. The concept inaccuracies in natural science textbook occur due to the following reasons: 1) Inaccurate presentation of biology content of the valid concepts; 2) Inaccurate explanation of the tissues or organs of the body function; 3) Inaccurate explanation of biological terms; and 4) Lack of detailed explanation so that it can lead to multiple interpretation in a sentence. The principle inaccurate in natural science textbooks occur because of inaccurate breakdown of chemical reactions in the respiratory process. The illustration inaccurate in natural science textbooks occur because does not match the picture and the description of the image or caption and there is error of sort number of caption.

The definition is one component that builds theory, various problems in student learning are due to their inability to articulate the differences between theory, theoretical frameworks, and conceptual frameworks (Kivunja, 2018). The definition will form a set of interrelated variables. Definition affects the quality of a theory. A good theory is built on the right and accurate concepts. The inaccurate concept can lead to misconceptions

and multiple interpretations for book readers. Inaccurate concept can affect students understanding and understanding up to the level of higher education. Therefore, the teacher's role is important in correcting the concept inaccurate in textbooks.

Textbooks are the main source of learning, the textbook writing team must pay attention to the applicable curriculum, author involvement and academic qualifications can minimize errors (Jazadi, 2015). each type of book has weaknesses and strengths, the book is said to be good if in its manufacture includes all the competencies must and its development refers to the curriculum 2013 (Tania & Fadiawati, 2015). Competencies that have not been fulfilled in the textbooks can be fulfilled by the teacher. Teachers can use relevant references in accordance with Basic Competencies. Teacher can also to arrange biology content using actual or contextual data or phenomena as a source of student learning.

There are teachers to depend on textbooks so the only source of learning is textbooks. In this condition, the role of the textbook becomes important and really determines whether or not the implementation of learning. Consequently, students' knowledge will be wrong if the contains in the textbook is wrong. Textbooks are a traditional part of education. Assumptions underlying the use of textbooks will enrich academic experience and show improved classroom performance (Fry & Villagomez, 2014; Hilton, 2016). That is because students' knowledge can be obtained from reading books or written sources.

The weaknesses in textbooks that still have inaccurate can occur because the authors less attention to the elements in writing textbooks. Interrelated systems have been demonstrated to affect learning. Besides, publisher editors who are not careful in editing textbooks from aspects of content, illustration, and design from textbooks as a source of learning can cause errors that should not be corrected (Muslich, 2010; Reynolds, Thaiss, Katkin, & Thompson, 2012). Therefore, teachers need to examine the content presented in the textbook before textbook used in learning activities. This is so that the inaccurate material presented in the textbook can be corrected or not conveyed to students.

Increasing inaccurate textbook content is very important to avoid misunderstanding in students; accurate content provides reinforcement of knowledge and the process of understanding comprehension. Agree with Halim, Finkenstaedt-quinn, Olsen, Gere, & Shultz, (2018), misunderstanding of concepts in students due to; student knowledge and the process of correcting misconceptions as well as tools for instructors in ensuring student knowledge gaps in informing relevant content. The accuracy of the principles presented in the textbook is important, so as not to cause multiple interpretations. Students' knowledge structures can influence misunderstandings, with correct interpretation turning misconceptions into learning strategies. (Leonard, Kalinowski, & Andrews, 2014). Teachers can use references or textbooks for Curriculum 2013 from other publishers that can help in fulfilling the achievement of Core Competence and Basic Competence. The other relevant reference can enrich the knowledge of students in junior high school eighth grade. Teachers as a facilitator in learning activities can arrange learning modules according to the basic competencies so that the material presented is consistent with the basic competency that students must study.

Textbooks have the important role in influencing students' personalities. Activities presented in textbook can instructed students to solve problems through observations or procedures instructed in textbook. Competencies to be achieved through improving experience practice and finding relevant information. Quality textbooks are important in learning activities. A quality natural science textbook based on National Education Standard Agency is as follows: 1) Writing textbooks refers to the Core Competencies and Basic Competencies the targets to be achieved by students; 2) textbook contain messages and information that can be communicated logically to readers. Therefore, the language used must be in accordance with good and correct Indonesian language rules; 3) presentation of contain and supporting contain presented in an interesting, interactive and able to encourage the process of critical thinking, creative, innovative and the depth of thought and metacognition and self-evaluation; 4) attractive physical appearance and illustrate the characteristics of science textbooks. Textbooks must be easy to use. Description of above to study the inaccuracies of concept, principle, illustration, and typography in the natural science textbook. Teachers who use the textbook can complement inaccurate in other relevant references equivalent to VIII grade junior high school.

CONCLUSION

The average percentage of Core Competencies and Basic Competencies suitability in science textbook published by Ministry of Education and Culture of Indonesia is about 86.25% (excellent) and the average percentage of Core Competencies and Basic Competencies suitability in science textbook published by EG is about 74,28% (Good). The biology content published by Indonesian ministry of education and culture contains more inaccurate concept, principle and illustration than the biology content published by EG. There none of principle and illustration are presented inaccurately in science textbook published by EG. There are 37 typographical errors found in natural science textbook for VIII grade in second semester curriculum 2013 junior high school published by Indonesian ministry of education and culture. Then, it can be concluded that textbooks can be used in learning activities with the following recommendations: 1) Basic competencies that are not presented in the textbook can be presented by the teacher. Teacher can using relevant references of VIII grade junior high school; 2) Teachers can develop learning module based on core competencies and basic competencies. Learning module can enhance knowledge and complement the basic competencies that do not presented in textbook; 3) The application of core competencies for spiritual attitude and social attitude is done indirectly in learning activities; 4) Inaccuracies of concepts, principles and illustrations in textbooks can be corrected by the teacher based on valid references.

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