IS MATHEMATICS TEXTBOOK PUBLISHED BY THE MINISTRY OF EDUCATION AND CULTURE OF INDONESIA FEASIBLE BASED ON MATHEMATICS TEACHERS' PERCEPTIONS?

Safrudiannur[1]

Abstract. *The research background is that Textbooks for the Curriculum 2013 were not ready. The purpose of this study is to investigate the feasibility of Mathematics Textbook of 7th grade based on mathematics teachers' perceptions. This textbook is published by the Ministry of Education and Culture of Indonesia. The results show that the mathematics textbooks are feasible to be used in teaching and learning because (1) teachers' perceptions to the completeness and accuracy of the content of Student Book are good, (2) teachers' perceptions to the role of the Student Book in the learning process are good, and (3) teachers' perceptions to the role of the Teacher Book as a guide are good.*

Keywords*: Mathematics Textbooks, Feasibility, Teachers' perceptions*

BACKGROUND

Indonesian students' mathematics performance was low on the international PISA (Program for International Student Assessment) survey. On PISA 2009, Indonesia was ranked 61st out of 66 countries with an average score 371 on the mathematics performance below an average score of International 496 (OECD, 2010). On PISA 2012, Indonesia was ranked 64th out of 65 countries with an average score of 375 below an average score of International 494 (OECD, 2014). Because of the low performance of Indonesian Student, Indonesian government through the Ministry of Education and Culture implemented the Curriculum 2013.

The implementation of Curriculum 2013 was held in the first semester in academic year 2013/2014 on several piloting schools. Then in the first semester in academic year 2014/2015, the curriculum 2013 was implemented to all schools in Indonesia. Before the implementation reached for one semester, in Desember 2014 the new Minister of Culture, Primary and Secondary Education Anies Baswedan announced the socking news.

The socking news from The Minister of Culture, Primary and Secondary Education was the termination of the implementation of the Curriculum 2013 (Budiari, 2014). Therefore, he decided that more than 100,000 schools which implemented The Curriculum 2013 in just one semester were required to re-use the previous curriculum,

[1] Dosen Program Studi Pendidikan Matematika FKIP Universitas Mulawarman

while 6,221 schools which implemented over three semesters were allowed to continue (Budiari, 2014).

There were some reasons why the Minister of Culture, Primary and Secondary Education stopped the implementation of the Curriculum 2013. He stated that one of them was the unreadiness of textbooks (Budiari, 2014). Some problems related to textbooks were that (1) the distribution of them did not covered to all schools and also they arrived late and (2) the time of the writing of textbooks was simultaneously with the preparation of curriculum (The Ministry of Culture Primary and Secondary Education, 2014). Whereas all textbooks including mathematics textbooks were created and published by The Ministry of Education and Culture (Now, it is called The Ministry of Culture, Primary and Secondary Education).

Textbooks are very important for mathematics teachers. Textbooks are used by mathematics teacher as the mathematics context source and the way of teaching mathematics (Özgeldi & Esen, 2010). The TIMMS survey reported that almost mathematics teachers used textbooks as the main source to select the teaching approach (Plianram & Inprasitha, 2012) and spent fifty percent of their time in class about textbook (Ghaderi, 2010). Moreover in many cases textbook is the sole means of teaching material (Altunda, Yıldız, Kö, & Aydın, 2009). Indeed various researches stated that the teaching approaches choosed by teachers and the teaching approaches embodied in the textbooks used in their classroom were often alike highly (Boonlerts & Inprasitha, 2013; Plianram & Inprasitha, 2012).

Textbooks are not only important for teacher but also to curriculum. They must reflect the objectives of the curriculum, the content of syllabus, and the skills for students. Textbooks must contain not only the subject matter but also includes learning process, as well as the expected competencies by curriculum (Sugandi & Delice, 2014). So, they connects curriculum intentions with classroom activities (Özgeldi & Esen, 2010). They offer a framework of guidance and orientation for teachers and perhaps they are the most important source for learners to contact with their teachers (Ramazani, 2013).

To guarantee the successfulness of the curriculum 2013 implementation, The Ministry of Education and Culture published mathematics textbooks in the mid of 2014. They were mathematics textbook revised edition in 7^{th} grade and mathematics textbook

first edition in 8th grade. But, because of one of the reasons for the termination of the Curriculum 2013 that textbooks are not ready to be used in learning, it makes a question for us. Are they feasible for the Curriculum 2013?

I am interested in studying the feasibility of mathematics textbook revised edition of 7th grade according to mathematics teachers' perceptions. Mathematics teachers are as respondents because they directly in contact to the mathematics textbooks of the Curriculum 2013. So, the purpose of this study is to investigate the feasibility of mathematics textbook revised edition on 7th grade according to mathematics teachers' perceptions.

RESEARCH METHOD

This research used a case study method with survey and interview approach. The sampling technique was purposive sampling with the consideration that all teachers had used mathematics textbooks published by the Ministry of Education and Culture. The sample was 29 mathematics teacher.

The research instruments were two questionnaires. Each of them consists of questions that were developed from the textbook analysis instrument of National Education Standards Agency (BSNP) of Indonesia. Questions on both questionnaires were close and open. The first questionnaire was aimed to determine teachers' perceptions to the student book. It consisted of 25 close questions and 29 open questions. The second questionnaire was aimed to determine teachers' perceptions to the teacher book. It consisted of 10 close questions 11 open questions. The interview was intended to get a more in-depth information related to teachers' answers to open question.

RESULT AND DISCUSSION

The feasibility of mathematics text book is reviewed from three components, namely (1) the content of the Student Book, (2) the role of the Student Book in teaching and learning, and (3) the role of the Teacher Book as a guide for teachers in teaching and learning.

The Feasibility of the Content of the Student Book: Completeness and Accuracy

The investigation about completeness and accuracy can be seen in Table 1 and Table 2 below:

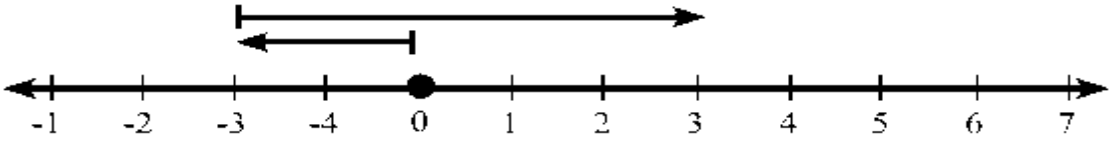
Table 1. *Teachers' perceptions to the completeness of the content of the Student Book*

No	Component	The Student Book 7th Grade	
		Average	Category
1	Each chapter is completed with illustrations, pictures, diagrams, or tables	7.7	Good
2	Each chapter is started with a concept map and ended with a summary	8.0	Good
3	Each chapter is completed with exercises/tasks to support the achievement of basic competence (KD)	7.2	Good
4	Each exercise in each chapter includes non-routine problems	7.8	Good
5	Each chapter is completed with tasks that require students to use information and communication technology	6.7	Good
6	Each chapter is equipped with enrichment materials	7.3	Good

Table 1 shows that the content of the Student Books is categorized good quality. The result of the interview also shows that the Student Book is feasible to be used for learning in the class even though there are few deficiencies. Deficiencies from teachers' views are as following:

1. There is a wrong illustration in the example but the description of solution is true.

Fig 1. *Number line of the operation* -2 – (-5)



Gambar 1.10 Pengurangan –2 – (–5)

Source: Figure 1.10 on page 11.

The error is that the number on the left of zero should be -1. The same type of error can be seen on page 10 and 11.

2. The number of Non-routine problems is enough but most of them are so difficult that several teachers do not discuss them in their classes.
3. The number of task required students to use information and communication technology is not enough.

Table 2. *Teachers' perceptions to the accuracy of the content of the Student Book*

No	Component	The Student Book 7th Grade	
		Average	Category
1	The content covers all the basic competencies described in KI 3.	7.5	Good
2	The content covers all the basic competencies described in KI 4	7.3	Good
3	All symbols used is suitable with international agreements	7.7	Good
4	All the definitions, concepts, properties, theorems, and formulas can be trusted scientifically.	7.0	Good
5	All Examples can be trusted scientifically	6.3	Good
6	All exercises are appropriate to the material and can be trusted scientifically	6.5	Good

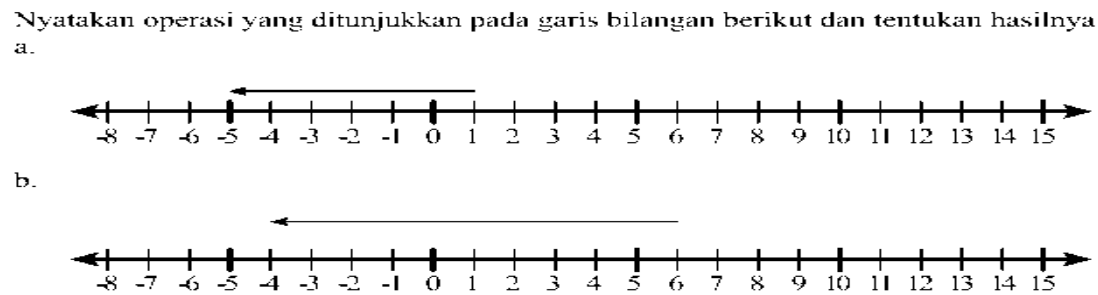
Table 2 indicates that the accuracy of the content of the Student Book according to mathematics teachers' perception is good. Although they have some errors, mathematics teachers can repair the errors when explaining the material.

The errors are:

1. There are some mismatches between the material order of the student book and the material order of the Curriculum 2013 syllabus which is published by The Ministry of Education and Culture.

   In the Student Book, the material order is (1) Number, (2) Set, (3) Ratio, and (4) Line and Angle while the material order in syllabus is (1) Integer and Fraction, (2) Set, (3) Ratio, (4) Linear Equation and Linear Inequality of One Variable, (5) Social Arithmetic, and (6) Number Pattern.
2. Some images on questions in exercises makes them be difficult to be solved.

Fig 2. *Line number was not suitable with the material in the same topic*



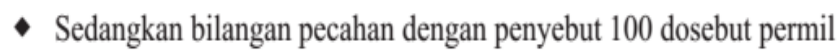
Source: Question number 2 on page 16.

The question on Figure 2 is that "Determine the operation which is showed by the line number and then determine the result". We can see on the Figure 2 that both a

and b, no one of arrow starts or ends at 0. While on the material, there is at least one arrow that starts or ends at 0.

3. There are some writing errors.

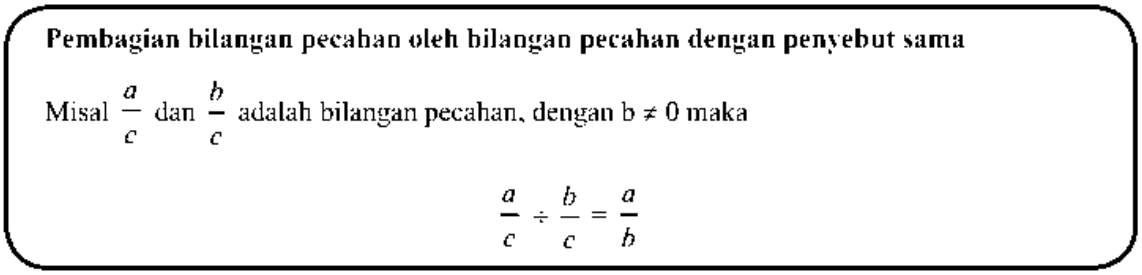
Fig 4. *The writing error of permil*



Source: on Page 55

On the figure 4, the denominator of permil is 100 but it should be 1000.

Fig 5. *The writing error of the requirement of fraction*



Source: on Page 63

It is wrong that the requirement of both fractions is $b \neq 0$, but it should be $c \neq 0$.

The Feasibility of the Student Book as a tool in teaching and learning

Not only should the content refer to the structure of the Curriculum 2013, but also the presentation of the content should pay attention to the learning process desired by the Curriculum 2013. Therefore, this study also investigates the feasibilitiy of the Student books as a tool for teachers and students in the learning process according to The Curriculum 2013.

Table 3. *The teachers' perceptions to the Student Book as a tool in teaching and learning process.*

No	Component	The Student Book 7th Grade	
		Average	Category
1	Description of the material can foster students' interest and motivation to learn mathematics	6.7	Good

2	Description of the material is suitable with the scientific approach	7.0	Good
3	Activities in the material is related to problem solving or discovery or project	6.7	Good
4	Activities in the material reflects the scientific approach	6,5	Good
5	Presentation of the material is from easy to difficult, from concrete to abstract, from simple to complex	6.8	Good

Table 3 shows that the general perceptions of teachers to the Student Book are good. Illustrations in the material and connecting material with life enhance students' interest and students' motivation in learning. In addition, the arrangement of the material helps teachers to conduct scientific approach and learning model recommended by the Curriculum 2013 such as problem solving, discovery, or project-based. The points disturbing teachers from on interview are (1) some mathematical problems presented at the beginning of certain chapter are too difficult so that they decreases the students' motivation, and (2) In the schools that the students' capability are low, students are less motivated to solve complex problems.

According to the 2103 Curriculum, learning in the classroom must be able to develop students' spiritual attitudes and social attitudes. Therefore, the Student Book should participate to help teachers to develop students' spiritual attitudes and social attitudes. The teachers' perceptions on this issue can be seen in Table 4 below:

Table 4. *The teachers' perceptions to the Student Book as a tool to develop the spiritual and social attitudes*.

No	Component	The Student Book 7th Grade	
		Average	Category
1	The Student Book can invite students to thank to God.	6.2	Good
2	The Student Book can invite students to practice their religion.	5.8	Not Good
3	The Student Book can develop positive characters such as curiosity, creativity, confidence, etc.	7.2	Good
4	The Student Book can develop social attitude such as cooperative, responsible, etc.	7.3	Good

Teachers' perceptions of the student books in developing spiritual attitude are generally good but quite low. It happens because the invitation to give thanks to Almighty God and the practicing of the religion is written only at the beginning of each chapter.

Teachers' perceptions of the student books in developing social attitudes are also good. Illustration and connecting material to daily life stimulate students to develop positive characters in themselves. Non-routine problems also encourage students to be more careful and serious. All activities also contribute to develop students' characters because they make students discuss cooperatively. Students who have high mathematical abilities helps students who have low mathematical abilities. But there are few students who can not work cooperatively because their groups' members are not their best friends.

The Feasibilty of the Teacher Books as Guide for Teachers.

The Feasibility of the Teacher Book in this research is studied from its role as a guide for teacher to teach the Student Book and to do learning process determined by the 2013 Curriculum.

Table 5. *Teachers' perceptions to the Teacher Book*

No	Component	The Teacher Book 7th Grade VII	
		Average	Category
1	Each chapter is equipped with concept mapping.	7.2	Good
2	Each chapter is equipped with indicators and learning objectives which must be achieved by students	6.8	Good
3	There are solutions and discussions every exercise especially for non routine problems or difficult problems	4.8	Not Good
4	There are enrichment material on each chapter	7.2	Good
5	There are discussions about learning strategies for each chapter.	6.2	Good
6	There are guides to assess students' attitude, knowledge, and skill.	6.5	Good
7	There are guides to do remedial.	6.3	Good

Table 5 indicates that teachers' perceptions are good. Teachers feel pleasantly because the Teacher Book helps teachers. Each chapter consists of concept mapping and enrichment problems that they help teachers to explain the material and addition material in student book. In addition, it also offer learning strategies related to the material in the student book. However, there are some complaints.

Teachers give complaint because there is no discussion about the solutions for problems in exercises, especially for non routine problems. In the Student Book are lots of non-routine problems which are difficult for most teachers. They do not discuss difficult non-routine problems in their class although their students ask.

CONCLUSION

Teachers in Samarinda, East Kalimantan, have perceptions that Mathematics Textbook of 7th grade published by the Ministry of Education and Culture is feasible used for the implementation of the 2013 Curriculum. It is feasible because (1) the completeness of the material in Student Books are good, (2) the accuracy of the material in the Student Books are good, (3) The Student Book is a good tool to help mathematics teachers to apply learning process recommended by the 2013 Curriculum, (4) The Student Book is a good tool to help teachers to develop spiritual attitude and social attitude of students, and (5) The Teacher Books is a good guidance to guide mathematics teachers to teach material in the Student Books. Although there are some errors, mathematics teachers can revise them when they explaining the material in their class.

REFERENCES

Altunda, R., Yıldız, C., Kö, D., & Aydın, M. 2009. Teacher views about the 8 th grade mathematics textbook prepared according to the new primary education mathematics curricula. *Procedia - Social and Behavioral Sciences*, *1*, 464–468. doi:10.1016/j.sbspro.2009.01.084

Boonlerts, S., & Inprasitha, M. 2013. The Textbook Analysis on Multiplication : The Case of Japan , Singapore and Thailand. *Creative Education*, *4*(4), 259–262. doi:10.4236/ce.2013.44038

Budiari, I. (2014, December 7). Anies nixes much-maligned 2013 Curriculum. *Jakarta Post*.Jakarta.Retrieved from http://www.thejakartapost.com/news/2014/12/07/anies-nixes-much-maligned-2013-curriculum.html

Ghaderi, M. 2010. The comparison analysis of the science textbooks and teacher's guide in Iran with America (science anytime). *Procedia - Social and Behavioral Sciences*, *2*(2), 5427–5440. doi:10.1016/j.sbspro.2010.03.886

OECD. 2010. *PISA 2009 Results : What Students Know and Can Do– Student Performance in Reading, Mathematics and Science (Volume I)* (Vol. I). doi:10.1787/9789264091450-en

OECD. 2014. *PISA 2012 Results : What Students Know and Can Do - Student Performance in Mathematics, Reading and Science (Volume I, Revised edition, February 2014)* (Vol. I). PISA, OECD Publishing. doi:10.1787/9789264201118-en

Özgeldi, M., & Esen, Y. 2010. Analysis of mathematical tasks in Turkish elementary school mathematics textbooks. *Procedia - Social and Behavioral Sciences*, *2*(2), 2277–2281. doi:10.1016/j.sbspro.2010.03.322

Plianram, S., & Inprasitha, M. 2012. Exploring Elementary Thai Teachers ' Use of Mathematics Textbook. *Creative Education*, *3*(6), 692–695. doi:10.4236/ce.2012.36103

Ramazani, M. 2013. perceptions of using English textbooks for Iranian technical and vocational college students. *Procedia - Social and Behavioral Sciences*, *70*, 1748–1762. doi:10.1016/j.sbspro.2013.01.250

Sugandi, B., & Delice, A. 2014. Comparison of Turkish and Indonesian secondary mathematics curricula ; reflection of the paradigms. *Procedia - Social and Behavioral Sciences*, *152*, 540–545. doi:10.1016/j.sbspro.2014.09.240

The Ministry of Culture Primary and Secondary Education. 2014. Information around the decision of the Minister of Culture, Primary and Secondary Education about the termination of the Curriculum 2013. Retrieved December 08, 2014, from http://kemdikbud.go.id/kemdikbud/majalah/pengumuman/seputarkeputusanmendikbudsoalpenghentianKurikulum2013.pdf