

THE COMPLETENESS, BREADTH AND DEPTH : A COMPARISON BETWEEN INDONESIAN AND CAMBRIDGE HIGH SCHOOL BIOLOGY TEXTBOOKS FOR CIRCULATORY SYSTEM

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ABSTRACT

This study was aimed to compare the completeness, breadth and depth high school biology textbook of Indonesia and Cambridge publisher. The comparison use an instrument based on National Education Standard Agency (BSNP) assesment instrument for book evaluation. The topic that compared in this research is Circulatory system. The sample was taken with purposive sampling method. The biology textbook from Indonesian published by Erlangga, Esis and BSE. One Cambridge book's publisher that is used in several schools, like Singapore, Malaysia, United Kingdom and Indonesia. The result data quantitative showed that the score of textbooks on a sample based on the completeness aspect of Cambridge book's publisher has score 4 or 100 %, Erlangga book's publisher has score 4 or 100 %, Esis book's publisher has score 4 or 100 %, and BSE publisher has score 4 or 100 %. For the breadth aspect score of textbooks are Cambridge book's publisher has score 4 or 100 %, Erlangga book's publisher has score 4 or 90 %, Esis book's publisher has score 4 or 100 %, and BSE publisher has score 4 or 100 %. In the depth aspect score of textbooks are Cambridge book's publisher has score 4 or 87.5 %, Erlangga book's publisher has score 4 or 100 %, Esis book's publisher has score 4 or 100 and BSE publisher has score 4 or 100 %. Hence, can be concluded that all textbooks that had been analyzed have content feasibility with each syllabus.

Keywords: Completeness, Breadth, Depth, Textbook, Circulatory System

INTRODUCTION

Textbook is one of the most important elements in the teaching learning process, because textbook can present a variety of material that will be taught. In addition, textbooks also support the teaching learning process to be going regularly and effectively. Without textbooks, teaching learning process will not be going smoothly and effectively. Brown stated that " The presence of a textbook is necessary to support teaching learning process " (Brown, 1994). It means that the presence of textbooks can facilitate students to follow the learning process. Many researchers have claimed that —textbooks are the most frequently used instructional materials for students and teachers at all grade levels (Florida University Department of Education [FLDOE], 2008). Especially in science, what is taught and how it is delivered is under the influence of textbooks.

Textbooks play an important role in effective biology education and they are fundamental sources of information to basic biological concepts, scientific research process and experimental activities (NRC; Haury, 2000). The

studies that were conducted abroad indicate that 90% of the teachers actively use textbooks as their main instructional tool and to assign homework (Blystone, 1989). It means teacher have to select textbooks in learning process. Textbooks as instructional material guide teachers in topic selection and provide ways to teach those topics. Textbooks serve to provide the learner with the opportunity to consolidate his/her understanding independently of the teacher.

If a textbook is the main source of information and order of content at biology lessons, then it should meet the needs of teachers and students. Teachers find it logical to follow the textbooks to make sure that the students learn all the content areas (Kuechle, 1995). However, it was found that students have difficulties to relate the concepts covered in the textbooks with their lives or students' background knowledge is not in line with the new concepts so these textbooks do not encourage students to do research (Leonard & Chandler, 2003).

There are three international studies are credible as instrument to test global competency,

they are PIRLS (*Progress in International Reading literacy study*), PISA (*Programme for International Student Assessment*) and TIMSS (*Trends in International Mathematics and Science Study*). These studies measure student literacy grade of reading, math and science in all the earth. Organization Programme for International Student Assessment (PISA) assesses the ability of reading, math, and science field. PISA survey organization does not only measure the student ability in solving problems or operating technique. The survey assesses the students' skills in problem solving, which includes identifying and analyzing problems, formulating reasons and communicating their ideas to others. The results of the PISA survey report in 2006, Indonesia was at 52nd rank of 57 participating countries in science. In the last PISA test 2012, Indonesia ranked 64 of 65 participant's countries, whereas in the last TIMSS test 2011, Indonesia ranked 36 of 40 (TIMSS, 2011). The result of the PIRLS report that the student of Indonesia can understand only 30 % of the material because they felt difficulties to answer the text questions that need understanding and analyzing. International studies report the student of Indonesia are still lower ranking than Singapore (TIMSS, 2007). The availability of textbook will give the impact students learning outcomes.

Related to the issue of school textbooks, the government through the National Education Standards Agency (BSNP) control book by assessment. The purpose of textbooks assessment is providing textbooks that are suitable to be used to improve the quality national education, improve the quality resource of Indonesia textbook, protect learners from books that are not qualified, and increasing interest of reading. The Governments' Regulation (No.19/2005 chapter 43 chapter (5) : "Quality of textbooks must fulfill four elements of feasibility, namely the feasibility of the content, the presentation of the feasibility, feasibility of language, and the feasibility of graphic, they are valued by BSNP. Standart feasibility content of textbook according to BSNP the material must support Competency Standard and Basic Competency of the lesson. The content feasibility of textbook can be valued of the completing, width and depth materials.

The completeness, breadth and depth of materials are most important necessary in a textbook, because it indicates how is greater the understanding of student to learn the material. based on the result of Tekkaya. et all. (2001) In Turkey, the student felt difficulties in learning process about Body System, for example the Circulatory system. So that's why, understanding of Circulatory System conception have to pay attention to the width, depth and up to date of the materials so that students are able to know more about materials and easy to understand.

The quality of indonesia textbook in three books in different publisher with textbook that published in Cambridge by the identification of completeness, breadth and depth use each countries curriculum. There are three textbooks of Indonesia as the comparison to know which one of the textbook is better to use and compare it to the Biology Textbook Cambridge's publisher. Does the quality of textbook that public in Cambridge country is better than indonesia textbook based on each curriculum? Therefore, the writer choose to do the research by lifting the title research "The Completeness, Breadth and Depth : A Comparison between Indonesian and Cambridge High School Biology Textbooks for Circulatory System".

RESEARCH METHOD

Research had done in the digital library UNIMED and the writer's house. It was conducted in February – July 2016.

RESEARCH TYPES

The sample of this research are biology textbook Cambrigde's publisher from Singapore and three biology textbooks from Indonesia. The samples were taken as purposive sampling. The textbooks are used in some schools and it can be found in writer location. The biology textbooks are: (1) Cambrigde book's publisher; (2) Erlangga book's publisher; (3) BSE book's publisher; (4) Esis book's publisher

RESEARCH PROCEDURE

The procedures to collect the data in this research are:

1. Selection of textbook

The textbook that have selected must be related to the below criteria, namely: (1) The textbook had be granted in textbook center. (2) Biology textbook Senior High School grade XI 1st semester that is the most using in several schools. The textbooks that used in indonesia are Erlangga, Esis and BSE book's publishers and Cambrigde book's publisher that is used in Indonesia and several countries, like Malaysia, Singapore etc.

2. Analyzing of biology textbook

The selected textbook is taken by using purposive sampling method based on student textbook in indonesia. The sample is the selected content in textbook which is pick out randomly. The analyzing use intrument biology textbook Senior High School based on BSNP. Based component standard content feasibility that include The completeness, Breadth and depth.

RESEARCH INSTRUMENT

Research Instrument is analyzed sheet based on National Education Standard Agency (BSNP) assessment which is made by the writer depend on the research necessary.

Content completeness scoring

Score	Status	Description
1	Insufficient	0% - 25 %, The content involves materials in Standard Competence and Basic Competence
2	Sufficient	26% - 50 %, The content involves some materials in Standard Competence and Basic Competence, added with additional knowledge related to Standard Competence and Basic Competence
3	Good	51% - 75 %, The content involves all materials in Standard Competence and Basic Competence
4	Very good	76% - 100 %, The

content involves all materials in Standard Competence and Basic Competence, added with additional knowledge related to Standard Competence and Basic Competence

Content breadth scoring

Score	Status	Description
1	Insufficient	0% - 25 %, The content that is provided reflect the explanation which support the Basic competence achievement.
2	Sufficient	26% - 50 %, The content that is provided reflect the explanation which support the Basic competence achievement.
3	Good	51% - 75 %, The content that is provided reflect the explanation which support the Basic competence achievement.
4	Very good	76% - 100 %, The content that is provided reflect the explanation which support the Basic competence achievement.

Content depth scoring

Score	Status	Description
1	Insufficient	0% - 25 %, The content comprises introduction and definition.
2	Sufficient	26% - 50 %, The content comprises introduction, definition, output display and example.
3	Good	51% - 75 %, The content comprises introduction,

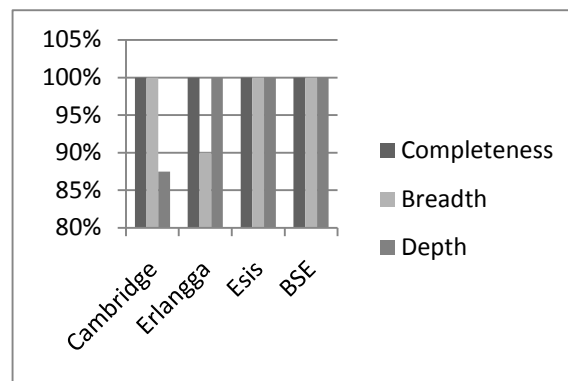
4	Very good	definition, output display, example, case, exercise. 76% - 100 %, The content introduction, definition, output display, example, case, exercise, procedure and accordance with syllabus.
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RESULT

Based on the analysis result by using instrument of BSNP in the completeness, breadth and depth assesment aspects will be known that the four textbooks which had been analyzed are feasible to the curriculum in each countries. The textbook of Cambrigde's publisher use the curriculum of Cambrigde. While, the three textbooks of Indonesia, namely Erlangga, Esis and BSE textbooks' publisher use curriculum of Indonesia. The feasibility of the textbook content with each curriculum will be described in the completeness, breadth and depth aspects. It means the four textbook have category very good grade for the completeness, breadth and depth aspects. The result of data are obtained into the quantitative and quantitative data. Quantitative data use instrument of BSNP for the completeness, breadth and depth aspect. Quantitative data is used to know the depth aspect by analyzing all the concepts of the four textbooks about circulatory system.

Book Analysis

The quantitative books analysis consist of the the numbering percentage scoring of the completeness, breadth and depth aspects that had been analyzed.



The Completeness Aspect

The result of completeness analysis according to the standart curriculum of its country indicates that Cambrigde, Erlangga Esis, and BSE, book's publisher are the most complete, the four textbooks have score 100 % (4). The completeness aspect indicates that the content involves all materials in Standard Competence and Basic Competence. All the textbook have score 4, it is added with additional knowledge related to Standard Competence and Basic Competence. Cambrigde book's publisher consist of twelve learning outcomes plus the enrichment, they are the mammalian circulatory system, diagrams of the structure of arteries, veins and capillaries, the structure of red blood cells, monocytes, neutrophils and lymphocytes, the differences between blood, tissue fluid and lymph, the role of haemoglobin in carrying oxygen and carbon dioxide, high altitude, structure of the mammalian heart, the cardiac cycle and controlled heart beat. While, Erlangga, Esis and BSE textbook comprises in to five basic competence that is have to be achieve of the books plus enrichment, namely organ structure in circulatory system, organ function in circulatory system, disease/ Abnormalities in circulatory system, mechanism in circulatory system, circulatory system implication in Salingtemas.

The Beradth Aspect

The result of breadth analysis based on the standart curriculum of its country refers that all books' publisher; Cambrigde, Erlangga, Esis and BSE are taken grade in breadth score 4. They are have differences in percentage only. Cambrigde, Esis and BSE have 100 %, but Erlangga have 90 %. It

means that all contents in the textbooks have involved in to the standart acevement of each countries curriculum. The Cambrigde book's publisher contains nine contents which support Basic Competence, they are mammalian circulatory system, structure and function of arteries, veins and capillaries, structure of red blood cells, monocytes, neutrophils and lymphocytes, blood, tissue fluid and lymph, the role of haemoglobin in carrying oxygen and carbon dioxide, the oxygen dissociation curves, humans at high altitude, structure of the mammalian heart, different chambers in terms of their functions, control of heart beat. While, Erlangga, Esis and BSE textbook have ten contents which support Basic Competence, they are blood component and its function, blood clotting, blood grouping, the parts of heart and its function, heart mechanism, blood vessels and its function, the figure of blood circulatory, deseases of human circulatory system , circulatory system of avertebrate animals, circulatory system of vertebrate animals.

The Depth Aspect

The result of breadth analysis based on the standart curriculum of its country shows that all books' publisher; Cambrigde, Erlangga, Esis and BSE are laid in grade of depth score 4. Erlangga, Esis and BSE have 100 % and Cambrigde have 87.5 %. It means that all contents in the textbooks have involved in to the standart acevement of each countries curriculum. In the depth aspects, all the textbooks contains the content introduction, definition, output display, example, case, exercise, procedure and accordance with syllabus. The introduction of Cambridge book explains how the animals have the transport system to transfer the energy to the other parts of body. It is same like Erlangga, Esis describes the energy transfer by using transport system. While, the BSE tells the anemia, as the kind of the disease that can be found in the circulatory system. Every textbook contains the definition of circulatory system. For the procedure of Cambridge book, is talking about observing and drawing blood vessels and cells. While, the three books have procedure to observe the blood grouping. Every books contains output display of heart, blood cells etc. For the example

content of the textbook consist of the mammalian circulatory system. The Cambridge book contains case of the high altitude that effect the increase in the red blood cell count of humans. While, the three books of Indonesia consist of the diseases. Then, every books have exercises to enlarge the capacity of the content for reader. The last, the content of each books are accordance with syllabus.

DISCUSSION

Based on the result data, the data can be gotten in a quantitative data and qualitative data. The quantitative data consist of the completeness, breadth and depth aspects analysis of each textbook. While, the qualitative data includes the depth aspect that contains the analysis of the contents of each textbooks.

The result of quantitative data describes the completeness aspect indicates that the four textbook are Cambrigde book's publisher, Erlangga, Esis and BSE textbook publisher have score 4. It means that all the textbook are feasible to each curriculum. The completeness aspect of Cambridge book have twelve learning outcomes that have to be found in its textbook. While, the completeness aspect of the three books from Indonesia have five basic competence that have to be owned by each textbooks. The comparison of completeness aspect between Cambridge book's publisher and three textbook of Indonesia are the basic competence of each curriculum. In the curriculum of Cambridge, the completeness aspect is scored based on the learning outcomes.

The result of quantitative data describes the breadth aspect describes that the four textbook are Cambridge book's publisher, Erlangga, Esis and BSE textbook publisher have score 4. It means the content that is provided reflect the explanation which support the Basic competence achievement or learning outcomes. The comparison of the breadth aspect between Cambridge book's publisher and three textbooks from Indonesia are the content which support basic competence .

The result of quantitative data explains the depth aspect describes that the four textbook are Cambridge book's publisher, Erlangga, Esis and BSE textbook publisher have score 4. It means the content contains introduction, definition, output

display, example, case, exercise, procedure and accordance with syllabus. The comparison of the depth aspect between Cambridge book's publisher and three textbooks from Indonesia are the content's structure. The structures are introduction, definition, output display, example, case, exercise, procedure and accordance with syllabus.

Muljono (2010) In a textbook, a good textbook is a textbook that have alignment to the Competency Standard and Basic Competency. In the other words, a textbook have to pay attention for the content feasibility, that include the component of completeness, breadth and depth aspects. So, the textbook have to contain the information that can give knowledge and develop curiosity of the students.

The result of qualitative data are the Cambridge book have the excess in the content of circulatory system, arteries, veins, capillaries, blood plasma, red blood cells, and cardiac cycles. It means, the books is very good explanation of its contents and more complete than another books. There are nine contents that is analyzed, and Cambridge book have seven excess contents of nine contents. While, Erlangga book have the excess in the content of white blood cells and cardiac cycle. It is only two of nine contents that have excess. Next, Esis book have the excess in the content of blood plasma, white blood cells and cardiac cycle. It has three of nine contents that have excess. BSE have the excess in the content of blood plasma, red blood cells, white blood cells, heart and cardiac cycle. The book have five of nine contents that have excess. So, based on the result explanation above, the qualitative data result prove that Cambridge book is in the first position or very good, the second book is BSE, the third book is Esis, and the last book is Erlangga.

One of the basic principles generally used for the development of a quality product is that it should meet the criteria used to determine its quality. This is done in reference to the indicators used to operationalize these criteria in the setting in which the product's quality is ensured. The principal conceptual framework for developing indicators for quality textbooks used here is Garvin's (1988) framework for quality products.

Garvin's Eight Dimensions of Product Quality

Below is a brief of Garvin's (1988) eight dimensions for a quality product:

1. *Performance* refers to primary operating characteristics e.g. speed, comfort, ease of use etc. for multiple performance features, and the relative importance of each.
2. *Features* are extras, add-ons, or gimmicks that enable a customer to customize a product somewhat.
3. *Reliability* reflects the probability of a product malfunctioning or failing within a specified time period.
4. *Conformance* is the degree to which a product's design and operating characteristics meet to pre-established standards.
5. *Durability* refers to the length of time, or extent of use, before the product deteriorates and must be replaced; durability is a function of the product's operating environment and reliability.
6. *Serviceability* is the speed, ease, and convenience of making maintenance work or repairs and the courtesy and competency of service people.
7. *Aesthetic* refers to the look, sound, smell, feel, or taste of the product based on personal taste; though subjective, some aesthetic judgments tend to be common.
8. *Perceived Value* is a subjective opinion about the product based on images or attitudes formed by advertising and/or the reputation of the producer.

CONCLUSION

Based on the four Biology Textbooks analysis about the completeness, breadth and depth aspects, can be concluded that:

1. For the completeness aspect of the four textbooks, all textbooks are grouped very good . The textbooks have the content that involves all materials in Standard Competence and Basic Competence.
2. For the breadth aspect of the four textbooks, all textbooks all textbooks are grouped very good. The textbooks have the content that is provided reflects the explanation which support the Basic Competence.
3. For the depth aspect of the four textbooks, all textbooks all textbooks are grouped very good.

The textbooks have the content that comprises Introduction, Definition, Output display, Example, Case, Exercise, Procedure and Accordance with syllabus.

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