

Needs Assessment of Biology Learning Materials for Integration Curriculum in Chandra Kumala School

Kurikulum 2013 (K13) and Cambridge International Examination (CIE)

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Abstract-The impact of globalization is multidimensional; the impact is also felt in the field of education, especially higher education that directly interacts with the international community. Specifically, globalization is driving the changing role of higher education institutions. Higher education institutions are challenged to change the curriculum in total. The integration curriculum is a blend of the current national curriculum in Indonesia (*Kurikulum 2013*) and foreign curriculum (some schools usually use CIE as awarding bodies from England). So far, the implementation of integration curriculum in national plus schools has been going well and has a positive impact for all parties, but it also has many shortcomings. The main problem is the unavailability of appropriate learning material for both of the curriculums. The research has the aim to investigate the learning needs of teachers and students by needs assessment. The research aspects were investigated and evaluated through a needs analysis conducted by doing interview, administering questionnaire and analyzing documents.

Keywords: *integration curriculum; learning materials; biology; needs assessment*

I. INTRODUCTION

The impact of globalization is multidimensional; the impact is also felt in the field of education, especially higher education that directly interacts with the international community. Specifically, globalization is driving the changing role of higher education institutions. Role as a traditional learning institution cannot be maintained and needs to be transformed into a knowledge-creating institution. In the meantime, randomly generated planning must be converted into strategic planning. From the point of view of the challenge, the comparative approach should be transformed into a competitive approach.

Higher education institutions are challenged to change the curriculum in total. Curriculum emphasis is no longer on content or knowledge but on the development of learning, creative skills, and the use of new information and communication technologies. One form of curriculum development that has recently received serious attention is the

integration curriculum. It is true that an integrated curriculum is an integral part of instructional innovation that invites students to study and discuss contextually, studying naturally available phenomena.

According to Government Regulation No. 31 of 2014 Article 1 verse 6, that the Cooperation Education Unit referred to as *SPK (Satuan Pendidikan Kerjasama)* is an educational unit organized or managed on the basic of cooperation between Foreign Education Institution accredited / recognized in the country and the Indonesian Education Institution on the formal or informal path in accordance with the provisions of legislation. (*Peraturan Kemdikbud.2014*)

Based on the research by Purnomo (2015), integration curriculum is a curriculum development to facilitate teachers in organizing the learning process. Integration curriculum should be done by a school that applies more than one curriculum. So that learners also have no difficulty in understanding the material given and able to achieve the main competencies in each curriculum very well. To support it, creativity of teachers is needed in organizing this integrated curriculum in the classroom. The support from principals and vice principals is also needed for the preparation and implementation of the integration curriculum.

The integration curriculum is a blend of the current national curriculum in Indonesia (*Kurikulum 2013*) and foreign curriculum (some schools usually use CIE as awarding bodies from England). The integrated curriculum is more concerned that in a subject must be integrated thoroughly. This integration can be achieved through focusing lessons on a particular problem with alternative solutions through the various disciplines or subjects required so that the boundaries between subjects can be eliminated. The existence of the learning process is not focused on studying the subjects, but the subjects are only used as a means to approach the problems that are the focus of the study. This enables each learner to acquire a learning experience appropriate to his or her own interests and talents, and can psychologically be a means of personal development intact. The subjects, however, are subjected to by the educator when the subject takes place as a guide and center for the integration of the topic, so that the learning and teaching

spirit does not leave the subjects set by the government to meet national education objectives.

So far, the implementation of integration curriculum in national plus schools has been going well and has a positive impact for all parties. But this integration curriculum also has many shortcomings. Then the unavailability of teaching materials is adequate for both curriculums simultaneously to be held. So for the initial research phase before developing a teaching material product, it is necessary to do a need assessment first.

II. MATERIALS AND METHODS

A. Research Design

This study employs descriptive and qualitative design as it reveals some aspects of integrated curriculum learning material. They are: effectiveness, display, language used and content. Those aspects were investigated and evaluated through a needs analysis conducted by doing interview, administering questionnaire and analyzing documents. The procedures were employed as the methods of data collection. The result of the needs analysis, hopefully, could become the inputs for future development of the learning material.

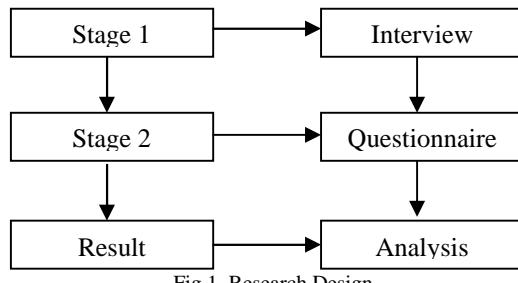


Fig 1. Research Design

1) *Respondents:* The respondents in this research were all secondary teachers (40 person) and all IGCSE 2 / 4th grade of secondary students (80 person) of Chandra Kumala School (Cambridge School ID 124) totalling 130 people.

2) *Instruments:* The needs assessment research data was collected by using interview questions and questionnaire questions. The primary data was collected in the form of qualitative, by the form of interview result from the respondents. There are 23 interview questions for students and 12 interview questions for teachers. The secondary data that was collected in this research is belonging to the descriptive quantitative data. It was collected by the following categories (modified from Likert scale): (1) bad / not feasible, (2) not good / less feasible, (3) good / feasible, (4) excellent / very feasible. There are 16 questionnaire questions for teachers. The questions grid was related with some aspects, namely:

- a) National curriculum textbook (Erlangga) and CIE textbook (Cambridge University Press)
- b) Suitability of teaching materials
- c) Teacher mastery
- d) Teaching method
- e) Learning experience

- f) Indicators demanded in the scientific literacy skills, including: science as body of knowledge, science as a way of thinking, science as a way of investigating also an interaction of science, technology and society.

III. RESULTS AND DISCUSSION

A. Results

1) Interview results

- a) *Interview with teachers:* Based on interviews conducted with the teachers, the results are as follows:

TABLE I. THE INTERVIEW RESULTS WITH TEACHERS

No	Questions	General Answer
1	Do you understand the level of educational units in the National Curriculum (Curriculum 2013) and Cambridge International Examination (CIE)?	In general, understand because I have participated in several training sessions.
2	Which learning material that is felt to be in accordance with the development of science? K13 or CIE?	Both are sufficient in accordance with the development of science.
3	Which of the National Curriculum teaching materials (<i>Kurikulum 2013</i>) or Cambridge International Examination (CIE) reference teaching materials that are felt to encourage students to think critically?	Both of them can encourage students to think critically, but it must be admitted that books published by Cambridge University Press are more real in providing examples.
4	Which of the National Curriculum teaching materials (<i>Kurikulum 2013</i>) or the Cambridge International Examination (CIE) reference teaching material that is felt to encourage student motivation?	Both of them can encourage student learning motivation, because motivation actually comes from yourself.
5	Which of the National Curriculum teaching materials (<i>Kurikulum 2013</i>) or the Cambridge International Examination (CIE) reference teaching material that is felt to increase scientific literacy skills in students?	For scientific literacy, the questions given to national teaching materials are far behind. For CIE they have 6 papers in the exam which contain different competencies. Of course the problem is very different from what we usually use

		here.
6	Does the material in the National Curriculum teaching materials (<i>Kurikulum 2013</i>) can cover all indicators demanded in the Cambridge International Examination (CIE) reference curriculum?	Not yet, because the material in the national curriculum (<i>K13</i>) is still too general and lacks specific demands in each KI, KD and indicators.
7	Does the material in the Cambridge International Examination (CIE) reference curriculum can cover all indicators demanded in the National Curriculum teaching materials (<i>Kurikulum 2013</i>)?	Most of them already, almost 80% of the material in the national curriculum can be covered by CIE.
8	Are you able to teach integration learning material using the National Curriculum teaching material (<i>Kurikulum 2013</i>) only?	Not able to because it is very inadequate.
9	Are you able to teach integration learning material using only Cambridge International Examination (CIE) reference material?	Not able to because there are demands in <i>K13</i> that are not found in CIE.
10	Do you find it difficult to teach integration using separate teaching materials between the National Curriculum (<i>Kurikulum 2013</i>) and Cambridge International Examination (CIE)?	Yes, that is the difficulty experienced since the establishment of the <i>SPK (Satuan Pendidikan Kerjasama)</i> . The absence of integrated teaching materials to teach the integration curriculum.
11	Do you need teaching materials that integrate the National Curriculum (<i>Kurikulum 2013</i>) and Cambridge International Examination (CIE)?	It is very important that the teacher and students are no longer confused in matching the material. There are times when learning with CIE then <i>K13</i> , this makes students feel as if there is a very big difference between the two, even though equations can still be

		drawn on each subject.
12	If you review the existing textbooks or teaching materials, do you meet the following 4 components: 1) science as a body of knowledge (presenting facts, concepts and laws); 2) science as a way to investigate; 3) science as a way of thinking (emphasizing the empirical nature and objectivity of science), 4) interaction between technology science and society.	It is unfortunate that the national curriculum teaching materials are good but still need a lot of improvement here and there. There is nothing wrong with us adopting teaching materials from others.

b) *Interview with students:* Based on interviews conducted with the teachers, the results are as follows:

TABLE II. THE INTERVIEW RESULTS WITH STUDENTS

No	Questions	General Answer
1	In your opinion, what biology materials do you find difficult to understand?	Taxonomy and ecology, because there are too many terms and too abstract. Too much is memorized, especially when it comes to cycles. Ecology is also divided into one new course in Environmental Management.
2	What textbook do you use / provided by the school to help you study the topic?	The books used at the school are Erlangga for national and Cambridge University Press (CUP) for international.
3	What is the appearance and presentation in the textbook, do you think it is interesting? Does the text book motivate you in learning?	The division of sub topics is slightly different in Erlangga and CUP. The book is quite interesting and motivating in learning.
4	What about the language used in the textbook, do you think it is clear and easy to understand or is still unclear and difficult to understand?	The language used is quite good and easy to understand.

5	Do the sample images and cases contained in the textbook match to the material explained by the teacher?	The sample images given in CUP are clearer and not wordy and are in accordance with CIE exam questions. If the material in a national book can sometimes be different from the exam material.		used in the teaching material, do you think it is easy to understand or difficult to understand?	understand.
6	Are textbooks used using illustrations that are close to everyday life?	For CIE material, the examples given are more global, but for national material, examples given sometimes involve life in Indonesia.	15	Does the book / teaching material help you to understand material concepts that are poorly understood or otherwise make you more confused?	CIE material book is clearer than national book.
7	Does the text book give you the opportunity to study independently?	Yes, in both books there are practice questions and practicum guides.	16	Does the book you use reveal what happened around the life observed?	CIE material book is clearer than national book.
8	Does the text book give you the opportunity to investigate the latest cases in the fields of science, technology and society?	Not for all. This is more commonly found in CUP books.	17	In your opinion, should biology teachers have an educational background that is in accordance with what is taught?	I think it should be. If different, there will be a deviation later
9	Does the book make it easy for you to learn with an integrated curriculum?	Not. It is precisely with the existence of 2 books and 2 curriculums such as there is no unity obtained. It's as if all are going on their own.	18	Have the teachers in the class mastered any material that will be taught? Give your reasons.	Already, because it's quite clear in carrying the subject matter.
10	Are there any difficulties you feel when learning an integrated curriculum with domestic publications?	It is very difficult, because the domestic books are still incomplete. There are a lot of demands on CIE.	19	Is there any communication or feedback between the teacher and students in the biology learning process in the classroom?	Yes it is. Teachers and students often discuss in class and students ask material that is not yet understood.
11	Are there any difficulties you feel when learning an integrated curriculum with books published abroad?	For national material, the 80% has been covered in CIE.	20	How is biology taught in class by your teacher? Does it use props or other learning media? Can it attract your attention while studying?	The method used is quite varied, such as explaining directly, quizzes, experiments and so on.
12	Do you use other books as learning resources other than textbooks?	None.	21	Do you have friends at home or at school? Give your explanation.	There are group friends and classmates who sometimes come to the house. Or just discuss it at school.
13	If so, where did the book come from? Is the book made by the teacher or by the publisher? If it is from a publisher, write the name of the publisher.	None.	22	Are there any different concepts on the material you learned in K13 and CIE? Give your reasons:	During this time we felt that it was two different things, because the implementation also could not be in line. After finishing one national topic, then next week discuss the topic of CIE.
14	What about the language	It's good and easy to	23	Do you need teaching materials that integrate the National Curriculum (<i>Kurikulum 2013</i>) with	I do, as a student, was very much in need because I was confused with the two

	Cambridge International Examination (CIE)?	curriculum and two teaching materials that did not intersect at all.
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B. Questionnaire results

TABLE III. THE QUESTIONNAIRE RESULTS WITH TEACHERS

No	Questions	Answer (%)					
		1	2	3	4		
1	I understand the level and educational units in the National Curriculum (<i>Kurikulum 2013</i>).	-	-	5	95		
2	I understand the of educational units in the curriculum referred to by Cambridge International Examination (CIE).	-	-	10	90		
3	The material in the National Curriculum (<i>Kurikulum 2013</i>) reference material is very in line with the development of science.	5	15	75	5		
4	The material in the Cambridge International Examination (CIE) reference material is very in line with the development of science.	-	5	85	10		
5	The material in the National Curriculum (<i>Kurikulum 2013</i>) can encourage students to think critically.	5	25	65	5		
6	The material in the Cambridge International Examination (CIE) can encourage students to think critically.	-	-	20	80		
7	The material in the National Curriculum (<i>Kurikulum 2013</i>) can encourage students' learning motivation.	20	50	30	-		
8	The material in the Cambridge International Examination (CIE) can encourage students' learning motivation.	-	5	25	70		
9	The material in the National Curriculum (<i>Kurikulum 2013</i>) can provoke science literacy skills to students.	5	30	60	5		
10	The material in the Cambridge International Examination (CIE) can provoke science literacy skills to students.	-	-	10	90		
11	The material in the National Curriculum (<i>Kurikulum 2013</i>) teaching materials includes all indicators demanded in the Cambridge International Examination (CIE).	5	70	20	5		
12	The material in the Cambridge International Examination (CIE) teaching materials includes all indicators demanded in the National Curriculum (<i>Kurikulum 2013</i>).	-	-	10	90		
13	I was able to teach the integration study material by using only National Curriculum (<i>Kurikulum 2013</i>) teaching materials.	10	80	10	-		
14	I was able to teach the integration study material by using only Cambridge International Examination (CIE) reference materials.	-	5	30	65		
15	I find it difficult to teach integration using separate teaching materials between the National Curriculum (<i>Kurikulum 2013</i>) and Cambridge International Examination (CIE).	-	-	20	80		
16	I need teaching materials that integrate between the National Curriculum (<i>Kurikulum 2013</i>) and Cambridge International Examination (CIE).	-	-	5	95		

C. Discussion

1) *Interview result discussion:* From the results above, some data can be interpreted. Both of the curriculum can encourage students to think critically and encourage the motivation. But for the scientific literacy, they assume that CIE contains 6 papers in the test which contain various competencies. So that this form of evaluation can improve students' scientific literacy skill.

The result also show that the material in the National Curriculum teaching materials (*Kurikulum 2013*) can not cover all indicators demanded in the Cambridge International Examination (CIE) curriculum, but almost 80% of the material in the national curriculum can be covered by CIE.

They also find any difficulties to teach integration using separate teaching materials between the National Curriculum (*Kurikulum 2013*) and Cambridge International Examination (CIE). The students were very much in need the new learning material because they were confused with the two curriculum and two teaching materials that did not intersect at all.

2) *Questionnaire result discussion:* From the results above, some data can be interpreted in the percentage format, based on the answer from the respondents. More than 90% teachers understand the level and educational units in the National Curriculum (*Kurikulum 2013*). The 75% thought that the material in the Cambridge International Examination (CIE) reference material is very in line with the development of science. More than 50% stated that material in the Cambridge International Examination (CIE) can encourage students to think critically.

There are around 70% who choose very agree and declare that the material in the Cambridge International Examination (CIE) can encourage students' learning motivation. Almost 90% people very agree that the material in the Cambridge International Examination (CIE) can provoke science literacy skills to students.

In the opposite site, they was not able to teach the integration study material by using only National Curriculum (*Kurikulum 2013*) teaching materials and by using separate teaching materials. So any 95% declare that they need teaching materials that integrate between the National Curriculum (*Kurikulum 2013*) and Cambridge International Examination (CIE).

IV. CONCLUSION

The results of this study indicate that almost all the respondent assume that:

- CIE material can improve students' scientific literacy skill,
- almost 80% of the material in the national curriculum can be covered by CIE,
- CIE can encourage students to think critically,
- the material in CIE can provoke science literacy skills to students,
- they need teaching materials that integrate between the National Curriculum (*Kurikulum 2013*) and CIE.

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