

Development Textbook of Social Sciences Basic Concept Based On Quantum Learning to Increase Student's Cognitive Learning Achievement

Muhammad Azriansah, Muhari, Waspodo Tjipto Subroto

State University of Surabaya, Surabaya, Indonesia

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Abstract

The research aimed to develop a textbook of social basic concept based on quantum learning to increase student learning achievement. The development model used four-D models (define, design, develop and disseminate). The research conducted the data from the students (second semester) of the primary education study program of STKIP YAPIS Dompu by using technique pretest-posttest group design. Based on the research, the quality of the textbook was a good category and proper to be used. In terms of content and language validity obtained an average score of 3.68, and presentation and graphic design obtained an average score of 3.87. The practice of the textbook in this research was implemented with a very good category, with a coefficient average of 90.28%. While, in terms of the increase of cognitive learning, experiment class obtained the average score 83 with class classical completeness 96.67%, the result was better than control class which proven by t-test. Independent sample t-test, score of $t_{count} 5.080 > t_{table} 2.001$ on $df 58$ with significance score (2.tailed) more little than score α ($0.000 < 0.005$). The use of the social science basic concept textbook based quantum learning got a very good response from the students which 97.78% gave positive responses. Based on result and discussion, it concluded that the textbook of social science basic concept based on quantum learning was able to increase the cognitive learning achievement.

Index terms: textbook, quantum learning and cognitive study achievement.

I. INTRODUCTION

The course of social science basic concept is one of the main courses in the study program of primary teacher training. The course aimed to equip the students to have competences and abilities to understand the materials of social studies basic concept (Summatmadja: 2006). Lecture of social studies basic concept are required to increase the abilities of teacher candidate of an elementary teacher in understanding the social studies as principal to instill values, elementary learners. Social studies course directed the student to become a good Indonesian citizen which is democratic, responsible and world citizen loving peace (Kurniyati: 2016). Social studies, besides equipping the students about knowledge of social sciences, it purposes to teach the students to become a good citizen of a nation or global (Astriati: 2009). As teacher candidate, the student will play a significant role in school and their society. Social transformation in teacher education offers possibilities for social change since the system would be able to promote a situation where

future teachers would critically with what exists in society. Social transformative pedagogy stimulates and raises consciousness in learners, allowing them to be active and responsible participants; and for them to recognize oppressive, violent and exploitative conditions (Siguake: 2009). Social science course is much needed as a main element in curriculum because social studies course preparing the young generation to become a good citizen.

The textbook has a significant role in learning activities. The textbook is curriculum conveyer, playing the main role in education to all subjects (Hadar: 2017). The textbook will be important in terms of functional, objective and effective as learning sources which help the educator/learner to capture the whole learning materials. A textbook as one learning source is a mean for transforming materials between educator and learner effectively. Realizing its urgent, the textbook should be provided in each course to help the learner. Lecturer/teacher and students obtain many beneficial by using the textbook; unit structure organized, appropriate content, embraced curriculum and has been designed to be used as means of teaching activity (Medina; 2016). Textbook is class equipment, such as proximity between teacher and students. Learning material could be defined as material which systematically constructed to be used by the teacher and learner in the learning process (Shanon: 2010). It can be concluded textbook is learning materials forming of information, tools, which systematically constructed with particular competence objective that will be mastered by the students in the learning process.

The existences of textbook in a learning activity ease the user to deliver learning materials to the students. Prastowo (2011) clarified the two function of a textbook. Firstly, function for the educator, there are five functions for the educator; (1) the educator could manage the time efficiently, (2) change the role of educator in class, from a teacher, become facilitator, (3) could change the process learning more effective and interactive, (4) as the guidelines for the educator to direct all learning activities and substantiation that should be taught, (5) as an instrument of achievement evaluation. Secondary, function for the learner might have, (1) the textbook materials can be independently learned by the students, (2) the students might learn the material anytime and whenever (4) the students could learn based on each learning speed, (4) the students free to chose the topic that they desire to learn, (6) as the guidelines to direct all learning activity and understand the competence that should be achieved.

The learning process of university level might emphasize forming the knowledge, gaining the skill and attitude of the student. The efforts to achieve the learning target need a mutual relation between the class learning process and the independent learning process. Likewise, Social studies as education program might not provide only social knowledge but also fostering the students to be a citizen who has the responsibility to achieve welfare togetherness in many perspectives. Therefore, the teaching of social studies for university students might not only be fostered to have high order thinking, but also to have high awareness and responsibility for the social welfare of the nation. revealed that awareness of social learning orientation for the teacher candidate might have an impact on a society where they live in. Due to the roles, learning material of social studies should not limit cognition, but also covering the values which attaché for the student with easily and pleurably presented (Akhan and Artickulac: 2013)

Based on the analysis, the textbooks must be constructed and improved to ease, please and grow students' interest in learning social studies basic concept. The learning convenience and interest could be obtained by the student if the construction of the textbook provides information and material with pleurably presented, in order to encourage the student are able to construct the condition independent learning. Complying the students' need of the pleasure learning then needed a model of constructing textbook which contains tips, instruction, synergy, and pleasant learning process. Those needs could be obtained on the textbook and learning process which based on quantum learning. Quantum learning is tips, instruction, strategy, and all learning process purpose to sharpen the understanding and memory, by constructing learning as pleasure process and useful (DePorter: 2014).

The philosophies of quantum learning itself are creating learning process such an orchestra with so many interactions in and surround the learning. The interaction which means embraced learning unsure effectively influences the learning style and the motivation. The interaction could change the ability and talent of students or university students which could be beneficial for them or for the people around them. Quantum learning is a learning model which emphasize that learning as a pleasure and meaningful process Turnip and Panjaitan (2014). Quantum model learning might help the students to think practically and easier in understanding concept, so that make easier to communicate the ideas in spoken or written (Adhitama, parmin and sudarmin: 2015). Based on the philosophy and principle of quantum learning, the researcher believed that the learning result by using the teaching book of social basic science concept based on quantum learning in the course of social basic concept will have a significant impact for cognitive achievement. In order to have findings, the researcher outlined the research questions/problems, (1) how the validity of the textbook of social science basic concept based quantum learning? (2) How the implementation of the textbook of social science basic concept based quantum learning? (3) How the effect of the textbook of social science basic concept based quantum learning?

II. RESEARCH METHODOLOGY

This study was research and development (R and D). This research developed five units of the textbook. The researcher conducted the data from the second-semester students of the primary education program of STKIP Yapis Dompu which consist of 15 students for first trials class and 60 for the second trial. Design of the developing book was the 4-D model by Thiagarajan Semmel dan Samuel (1974), which consist of define, design, develop and disseminate. The process of developing in this research was been simplified until the third step (step develop), not until the fourth step (disseminate).The research design was pre-test-posttest group design which conducting experiment class and control class. The instrument of this research was consisting of validation sheet, practice textbook sheet, and effectiveness of textbook sheet. The data were analyzed by descriptive quantitative. The analysis of quantitative result would be described as qualitative.

III. FINDINGS AND DISCUSSION

Research findings are grouped into subheadings: the validity of the textbook, the practice of the textbook, and the effect of the textbook. The judgment of textbook validity was given by two experts who were experts in their discipline. Both observers gave the score by a checklist which was provided in the instrument.

1.1. The validity of textbook

Table 1. Validity content and language of textbook

No	Aspect of judgment	Score		Average
		V1	V2	
A.	Component of content validity			
1.	Materials were presented based on standard of KKNI which embraced: The complete of materials, Breadth materials, Depth of materials	4	4	4
2.	The accuracy of materials embraced: The accuracy of fact and concept, Accuracy of illustration	4	4	4
3.	Learning supporting materials embraced: Appropriate of latest knowledge. Latest feature, example and contextual reference	3	4	3.5
4.	Encourage the students to identify, understand, solve problem and apply learning materials	3	4	3.5
5.	Based on concept, theory and empiric fact	4	3	3.5
B.	Component validity of language			

1.	Appropriate with the level of students development embraced: Appropriate with the level of thinking development, appropriate with the level development of social emotional.	3	4	3.5
2.	Communication embraced: Understandable of sub-sub message and paragraph, the relation within chapter, sub-sub chapter, paragraph and sentences.	4	4	4
Total score		28	27	26
Score average				3.68
Percentage				92.86%
Conclusion: valid with a little revision				

(V1) First validator, (V2) second validator

Table 2. Validity of presentation and graphic

No	Aspect of judgment	Score		Average
		V1	V2	
A.	Component of presentation	4	4	4
1.	The technique of presentation embraced: coherent concept, systematically consistent, balance within chapter			
2.	Learning presentation embraced: students centered, develop skill process, variation of presentation	4	4	4
3.	The completeness of presentation embraced: introduction, content part, and summary			
B.	Component of graphic			
1.	Appropriate size of textbook with the ISO Standard (A4, A5 and BS), appropriate size with materials content of textbook, design of cover harmonically constructed, unity and consistent.	4	4	4
2.	Cover design embraced: layout, typography of cover, and font	4	4	4
3.	Design of textbook content embraced: represent all content, harmonically layout, complete layout, layout understanding, and content typography of textbook and content illustration.	4	3	3.5
4.	Interesting typography with appropriate color, font, two maximum type, variety (bold, italic, underline) font size 12 until 16, space between 1 until 1.5.	3	4	3.5
5.	Proportional layout, front cover compatible with back cover	4	4	4
Total score		31	31	31
Score average				3.87
Percentage				96.88%
Conclusion: valid with a little revision				

(V1) First validator, (V2) second validator

Validation of a developed textbook product is needed, as a method to assess the level of validity in terms of the appropriate presentation and the language of developed product. The validity itself is adjusted with the standard of textbook development by national standard of education body (2007) those there four components should be accomplished, which consist of validity of content, language, presentation, and graphics. Those basics are the main device of developing the textbook (Hutama: 2016). Based on the assessment of validity, textbook of social science basic concept based quantum learning could be categorized as a very good/valid.

Data of Table 1 showed the result of textbook analysis in terms of validity of language and content (materials) have a scoring average of 3.68 with the percentage 92.86%. While Table 2 showed the result of textbook analysis in terms of presentation and graphic. The average score of presentation and graphics validity is 3.87 with a percentage of 96.88. Based on the result, the book of social science basic concept based on quantum learning is valid.

1.2. *The practice of the textbook*

The practice of quantum learning syntax could be known from the data of learning implementation on lesson plan instrument. The implementation of the textbook of social science basic concept was very good implementation. Learning activities were assessed by two observers.

Table 3 Implementation of developed textbook in learning activity based on quantum learning syntax

No	Learning activity	LPI 1		LP2		LP3		Average	category
		P1	P2	P1	P2	P1	P2		
1	Step growing	4	4	4	4	4	4	4	Very good
2	Step experiencing	4	4	4	4	4	3	3.83	Very good
3	Step naming	4	4	4	3	3	4	3.67	Very good
4	Step demonstrating	3	4	4	3	4	4	3.67	Very good
5	Step repeating	4	4	3	4	4	4	3.83	Very good
6	Step celebrating	4	3	4	4	4	4	3.83	Very good
Total score		23	23	23	22	23	23		
Average score		3.83		3.75		3.83			
Reliability		95.83		93.75		95.83			
Reliability average		95.13%							

LPI: lesson plan instrument. P: Observer

Table 3 showed the observation result of both observers for learning activity using social science basic concept textbook based on quantum learning was very good implemented. Based on the data, on the first meeting, implementation average score was 3.83, second meeting average score was 3.75, and the third meeting, the scoring average was 3.83. Reliability coefficient instrument of the learning implementation on the first meeting was 91.67%, the second meeting was 89.58%, and the third meeting was 89.58%. Coefficient average of reliability from all three meetings was 90.28%. If the coefficient reliability $\geq 75\%$, the instrument could be categorized as very good (Borrich: 1994). Referring to Borrich statement, implementation of learning in this research was very good implemented with the coefficient of $90.28\% \geq 75\%$. Quantum as a leaning model provides a chance for students to learn based on students' way (Supriyanto: 2016).

Learning by using social science basic concept based quantum learning has principle brought the teacher world to the student's world. By constructing the system, it required to grow the student's self-efficacy. The feeling of self-efficacy is the confidence of human on their ability to train such self function and occurrence around them (Dahar: 2006). There would be a connection between the occurrence surroundings to the individual learning process (Dundar: 2012). The accuracy process very appropriate with the learning step of social science basic concept based quantum learning, because it provided the student some issues in

growing step as encouragement. The phenomenon that students observed in their daily day which is combining with the concept and issue in the textbook.

1.3 The effectively of textbook

The effectively of the textbook becomes the result of learning activity. The effectiveness could be identified form cognitive learning achievement. The achievement of cognitive learning as the impact of using the textbooks of social science basic concept based on quantum learning could be seen on the result of the first trial. The achievement of student’s cognitive learning on post-test of the first trial was 86.67% classical class completeness with an average score of 77.5. The result was better than in comparison with the result of pre-test of first trials which classical class completeness just 20% with the average score 51.66. By looking at the data of the first trial, the use of the textbook of social science basic concept based on quantum learning has an impact on the increase of cognitive learning result. In order to prove comprehensively, the textbook should be used in the second trial (large trial). The second trial used pre-post test group design which consists of experiment class and control class. Comparison class was needed to avoid the perception that the increase of cognitive learning outcome is caused by other factors, not the impact of the textbook. Control class was also used quantum learning as a learning model, but using a conventional module. The differences of both treatment class just on the implementation of social science basic concept textbook based quantum learning, not because of the effect of the learning model.

Based on the pre test of control class, classical class completeness on the second trial was 40% with average score 68.67, while the result of pre-test of experiment class was 43.3% with an average score of 68.33. Both pre-test data were normally distributed and homogeny based on normality and homogeneity test. Learning of experiment class and control class allocated each tree meetings. Proving the effects of both classes, post-test must be conducted. Post-test of control class obtained completeness classical class 60% with a scoring average of 72.50. While post-test of experiment class in terms of completeness classical class was 96.67% with average score 83. Observing the result, surely average score and completeness classical class of experiment class better than control class, however to prove furthermore, it needed t-test to seek the significantly by using SPSS 16.0.

Table 4. Post test T-test of experiment and control class

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means							
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
								Lower	Upper	
Hasil belajar	Equal variances assumed	.054	.818	.5.080	58	.000	10.500	2.067	14.638	6.362
	Equal variances not assumed			5.080	57.754	.000	10.500	2.067	14.638	6.362

Based on the result of t-test post-test of control and experiment class, independent sample t-test, the score of $t_{\text{count}} 5.080 > t_{\text{table}} 2.001$ on df 58 with significance score (2.tailed) more little than the score α (0.000 < 0.005).

Based on the data, naught hypotheses (Ho) which submitted was rejected, and the alternative hypothesis (Ha) was accepted. Therefore, it could be concluded that the learning result by using the textbook of social science basic concept based on quantum learning was better than the learning result which was not using the textbook of social science basic concept based on quantum learning. In order to prove the effectiveness of the textbook, respond of students was also needed. The use of the developed textbook in the learning got a positive response from the student, which 97.78% of all students gave positive responses. The dominance of students who gave positive responses as the impact of the developed textbook. Quantum learning as basic learning in developed textbook gives the chance for students to learn based on their track, with pleasure process, without any pressure. Quantum learning syntax emphasizes that learning is a pleasure process (Turnip and Panjaitan: 2014). Learning activity running into the level of their receptive ability.

IV. CONCLUSION

Realizing the impact of the textbook of social science basic concept based quantum learning, the researcher suggest to any education stakeholders, especially the teachers and the lectures to use the textbook in order to increase the student's cognitive achievement. Using the textbook of social science basic concept based quantum learning have required the ability and creativeness of the teacher to find certain and latest issues as part of the quantum step of learning in order to create pleasure learning so as to able to increase the cognitive learning achievement.

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AUTHORS

First author – Muhammad Azriansah, State University of Surabaya, azrisila@gmail.com

Second Author – Muhari, State University of Surabaya

Third Author - Waspodo Tjipto Subroto, State University of Surabaya

Correspondence Author - Muhammad Azriansah, State University of Surabaya, azrisila@gmail.com 082359222379