

Developments of Project Based Learning Textbooks to Improve Emotional Intelligence of Students in Five Grade in Elementary Schools

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Abstract. This study aimed to developments of project based learning textbooks to improve emotional intelligence of students in five frade in elementary schools. The design of this research was adopted from Borg & Gall design model. The subject were 50 students divided into experiment and control class with purposive sampling technique. The data collection was done by emotional intelligence questionnaires, eligibility questionnaires, interviews and observations. The effectiveness of textbook shown from students emotional intelligence in experiment class N-gain (63%) with medium category which was higher than control class (34%) with low category. The feasibility of textbooks was assessed by material expert with “very valid”, media expert with “very complete”, and media linguist with “usable” category.

Keywords: Project Based Learning (PjBL), Students Emotional Intelligence, Textbooks

1. Introduction

The 21st century requires every individual to have qualified hard and soft skills to be able to enter the workforce and be ready to compete. Three skills that need to be provided to every individual in the 21st century, one of which is learning and innovation skills. Learning and innovation skills consist of four aspects, namely creativity and innovation, critical thinking and problemsolving, communication, and collaboration [1]. Basically, the implementation of creative and innovative skills, critical thinking and problem solving, communicative and collaborative not only involves intellectual intelligence but also emotional intelligence. Emotional intelligence provides opportunities for individuals to exploit their intellectual potential. Emotions connect the body with the brain and provide energy to accelerate academic achievement, health and personal success. Everything humans do is controlled by emotions [2]. Emotional intelligence is meta-ability, which determines how well we are able to use the other skills we have, including intellectuals that have not been honed [3]. Emotional intelligence is a type of social intelligence that involves the ability to monitor ones own and others feeling, to distinguish between them, and to use the information to guide thinking skill and actions. The scope of emotional intelligence includes verbal and nonverbal judgment and emotional expression, emotional regulation in theirself, and the use of emotional content in problemsolving [4]. Emotional intelligence enhances the ability to learn and solve problems. People with a higher EI are able to generate a mood that allows them to do better on challenging cognitive tasks [5].

Emotional intelligence can be learned and increased with age, but with a note there must be motivation, habituation, feedback, and efforts to improve the skills of the individual itself. The truth is that some will be more naturally gifted than others but the good news is that emotional intelligence skills can be learned. (This must be so because emotional intelligence is

shown to increase with age) [6]. The importance of teaching emotional intelligence to children to provide better opportunities for them in order to exploit the potential they have [3]. The process of education and care are gained by children, forming learning experiences that are meaningful to him. Besides family, school also plays a big role in the development of a child's emotional intelligence. Especially, considering the child spent a long time at school and perform various activities that might affect the formation of emotional intelligence. In fact the emotional intelligence of students is not well developed. This can be known from the results of preliminary research. The preliminary research was conducted by giving a questionnaire of emotional intelligence that researchers had developed to 394 of five grade elementary school students who had implemented the 2013 curriculum in the District of Rajabasa, Bandar Lampung. The results have shown at Table 1.

Table 1. Average Score of Emotional Intelligence of Five Grade Elementary School Student In Academic Year 2019/2020 of Rajabasa, Bandar Lampung.

No	School Name	Class	Number of Student	Average Score of Emotional Intelligence	Category
1	SDN 1 Rajabasa	VA	30	113	Medium
		VB	25	108	Low
		VC	17	110	Low
2	SDN 2 Rajabasa	VA	30	110	Low
		VB	51	113	Medium
		VC	55	108	Low
3	SDN 3 Rajabasa	VA	25	107	Low
		VB	27	112	Medium
4	SDN 3 Rajabasa Jaya	V	36	111	Medium
5	SDN 1 Rajabasa Raya	VA	33	108	Low
		VB	32	113	Medium
		VC	33	111	Medium
Sum			394	1324	
Average				110	Low

Based on the measurement results, it shown that the average value of emotional intelligence of students is 110, and have "low" category. Development of emotional intelligence of these students becomes "homework" educators. Educators as the spearhead of education must be able to maximize it with a variety of tips that are considered to provide maximum results for increasing students emotional intelligence. Therefore, it seems essential to consider opportunities for emotional engagement and development in educational settings, where the principal aims is to prepare youth (in the case of higher education) not only for academic and professional success but also for a satisfying and enjoyable professional and private life [7]. The increasing of emotional intelligence in schools related to the learning process undertaken. Emotional intelligence can be taught explicitly or implicitly. If emotional intelligence is taught implicitly, it does not add learning material directly but educators only need to determine approaches, strategies and learning models that use aspects of emotional intelligence.

Learning models are as a frame of approaches, strategies, methods, and learning techniques. There are several learning models suggested in the curriculum of 2013, one of which is the project-based learning. One of definition says that project-based learning (PjBL) is an approach that engages students in inquiry and all related activity. This method is structured based on the some questions which was answered by students when participate of

assignments [8]. The characteristics of project-based learning are elaborate students thinking skills, enable the students have to creativity, make the students work together and train them to access the information. Project-based learning requires the students to participate in the learning activities especially teamwork [9]. The basic of project-based learning allows students to use and improve their emotional intelligence. The experience of project-based learning also involves students in communication with others which gives them the opportunity for debriefing and re-application, which in support of developing self-awareness and generating active participation and increased motivation [7].

Based on this, it is needed project based learning based learning through the development of appropriate and appropriate learning resources so that students' emotional intelligence can be increased. One example of a learning resource that can be developed is a textbooks. Basically, textbooks are mostly used teaching and learning materials for teachers and the students. They not only provide a framework for teachers to achieve the purpose, but also have function as a guide to teaching [10]. Textbooks are books that used as a standard source of information for formal learning of a subject and instruments for teaching and learning which must be considered as one of the many sources that could be taken by teachers for creating effective lessons and could be offer a framework of guidance and orientation [11]. Textbooks have an important role in the teaching and learning process and they are the main agents in conveying knowledge to students. In addition, another function of the textbook is to provide knowledge to students easily and organizedly [10].

Based on the background above, the authors will conduct research to produce products in the form of developing textbooks based on project based learning models. The aim is to improve the emotional intelligence of elementary school students, especially grade five at SDN 3 Rajabasa, Rajabasa District.

2. Method

This type of research was research and development research (R&D) which is used to develop and validate educational products. The term "product" includes not only material objects, such as textbooks, instructional films, etc. but also intended to refer to procedures and processes, such as teaching methods or method for organizing teaching [12]. The steps in this research refer to Borg and Gall.

The population in this study were all five grade students of state elementary schools in Rajabasa who had implemented the 2013 curriculum with 394 students in academic year 2019/2020. The sampling technique in this study used a purposive sampling technique, so that the experiment class (using the development of textbooks based on project based learning) in this study 25 students in SDN 3 Rajabasa, and 25 students in SDN 1 Rajabasa as a control class (did not use textbooks based on project based learning). Data collection techniques used the scale of emotional intelligence that has been tested for validity and reliability to measure the intelligence of students, questionnaires for learning the feasibility of products, and interviews and observations to find out the responses of educators and students. Data analysis techniques were carried out quantitatively and qualitatively. The study in this article discussed the feasibility and effectiveness of project-based textbooks to improve student intelligence.

The feasibility of textbooks was assessed by material experts, media experts, linguists, using instruments in the form of questionnaires. Data obtained through the expert validation sheet consists of quantitative data based on the results of the score on the approval of the suitability of the textbook and qualitative data obtained based on comments or suggestions

regarding the feasibility of the teaching being developed. The requested or expected score of each component could be calculated using the following formula (1).

$$(1) \quad N = \frac{R}{SM} \times 100\%$$

Information:

N = value sought or expected

R = raw score obtained

SM = maximum score

The result of assessment of material experts, media expert media linguist, and practitioners were converted to the final score which can be seen in Table 2.

Table 2. Validity Criteria for Material Experts, Media Experts, Linguists, and Practitioners

Final Score	Criteria
81% - 100%	Very Valid, very complete, can be used
61% - 80%	Valid enough, effective enough, can be used with minor improvements
41% - 60%	Less valid, less effective, less thorough, not for use
21% - 40%	Invalid, ineffective, incomplete, cannot be used
0% - 20%	Very invalid, very ineffective, very incomplete, cannot be used

Next is testing the effectiveness of textbooks. First, analyzing students pretest and posttest score with the emotional intelligence questionnaire as a measurement tool. The emotional intelligence questionnaire contain 55 items and has been tested for validity and reliability. Alternative answers in this questionnaire use a Likert scale, with four choices that could be seen in the following table.

Table 3. Guidelines the Scoring Intelligence Emotional Questionnaire

Rating Standards	Always	Often	Rarely	Sometimes
<i>Favorable statement</i>	4	3	2	1
<i>Unfavorable Statement</i>	1	2	3	4

After obtaining students emotional intelligence score, then testing the effectiveness of the textbook using paired sample t-test techniques, gain analysis, and independent t-test. The purpose of paired sample t-test is to compare the difference average pretest and posttests data from the experimental class and control class. The basic for decision making is as follows

- a. If $t_{\text{value}} > t_{\text{table}}$ and probability (Asymp Sig) $< 0,05$, then there are differences in emotional intelligence of student before and after carrying out learning in experiment class and control class.
- b. If $t_{\text{value}} < t_{\text{table}}$ and probability (Asymp Sig) $> 0,05$, then there is no differences in emotional intelligence of student before and after carrying out learning in experiment class and control class[7].

Hake revealed that in order to know the effectiveness of a learning in conceptual understanding, an analysis of the average value of normalized gain was carried out. The n-Gain formula according to Meltzar is as follows.

$$(2) N - gain = \frac{\text{posttest score} - \text{pretest score}}{\text{maximum score} - \text{pretest score}}$$

The result of the N-gain calculation were interpreted using the classification (Table 4).

Table 4. N-Gain Classification

Value of N-gain	Interpretation
$N-gain > 0,7$	High
$0,3 < N-gain \leq 0,7$	Medium
$N-gain \leq 0,3$	Low

The result of the calculation of emotional intelligence in experiment class and control class could be interpreted by using the interpretation category of the effectiveness of N-gain have shown Table 5.

Table 5. Classification the Effectiveness of Textbooks

Percentage (%)	Interpretation
< 40	Ineffective
40 – 55	Less Effective
56 – 75	Effective Enough
> 76	Efective

Independent t-test used to discover the difference using textbooks that developed in grade V elementary school students who have implemented the 2013 curriculum. The basic for independent t-test decision making is as follows:

- a. If $t_{\text{value}} > t_{\text{table}}$, there are difference between emotional intelligence of students in control class and experiment class significantly.
- b. If $t_{\text{value}} < t_{\text{table}}$, there are no difference between the emotional intelligence of students in control class and experiment class significantly.

3. Results

3.1 Feasibility of Project Based Learning Textbooks to Improve Students Emotional Intelligence

Feasibility of textbooks to improve students emotional intelligence is done by testing validation of products developed by competent experts on textbooks. This validation is needed to assess the results of the first hypothesis testing based on validation of textbook by material experts, media experts, linguists and practitioners (Table 6).

Table 6. Recapitulation of Validation Test by Material Expert, Media Expert, Media Linguist and Practitioner

No	Validator	Percentage
1	Material Expert	95%

2	Media Expert	97%
3	Linguists	90%
4	Practitioner	97%
Average		95%

Based on the recapitulation of the validation test, it shows that the percentage of the four components of validation is above 90%. The highest percentage of validation results of media experts and educators was 97%. The lowest percentage of linguist validation tests was 90%. The average percentage of the four components of validation was 95%, and have category “very valid”, “very thorough”, and “feasible”. So, it was concluded that textbooks appropriate to improve students emotional intelligence.

3.2 The Effectiveness of Project-Based Learning Textbooks to Improving Students Emotional Intelligence

3.2.1 Paired Sample t-test

Based on the results, which obtained some important data which are presented (Table 7).

Table 7. Recapitulation of Pretest and Posttest Data in Experiment Class and Control Class

Class	N	Mean		Paired Sample T Test			
		<i>Pretest</i>	<i>Posttest</i>	Mean	T Count	DF	Sig. (2-tailed)
Experiment	25	107,48	178,56	-71.080	-24.894	24	0,000
Control	25	108,72	146,80	-38.080	-15.790	24	0,000

The table above showed some important information. **First**, it shown that the value (2-tailed) in experiment class and control class are both 0.000 less than 0.05. It shows there was a difference between the pretest and posttests scores of students emotional intelligence in control class and the experiment class. **Secondly**, it can be known the t_{value} of experiment class and control class is -24,984 and -15,790. T_{value} of experiment class and control class indicate lower than mean posttest. So that in this context the negative value was positive, namely 24.984 and 15.790. Both of these values were greater than the value of t_{table} with df 24 ($\alpha / 2 = 0.05 / 2 = 0.025$) which was 2.064. Similar to the significance value (2 tailed), this also shows differences in emotional intelligence of students before carrying out learning in experiment class and control class.

Third, there were the differences pretest and posttests score in experiment class and control class. were 107.48 and 178.56. Difference between the two classes was -71,080. While pretest and posttest score in control class were 108.72 and 146.80. The difference between the two from the mean paired differences is -38,080. The negative value of mean paired differences also shows the mean pretest which was lower than the mean posttest, so that in this context it was positive. To be clearer, a comparison of the pretest and posttests score in experiment class and control class could be seen in this histogram.

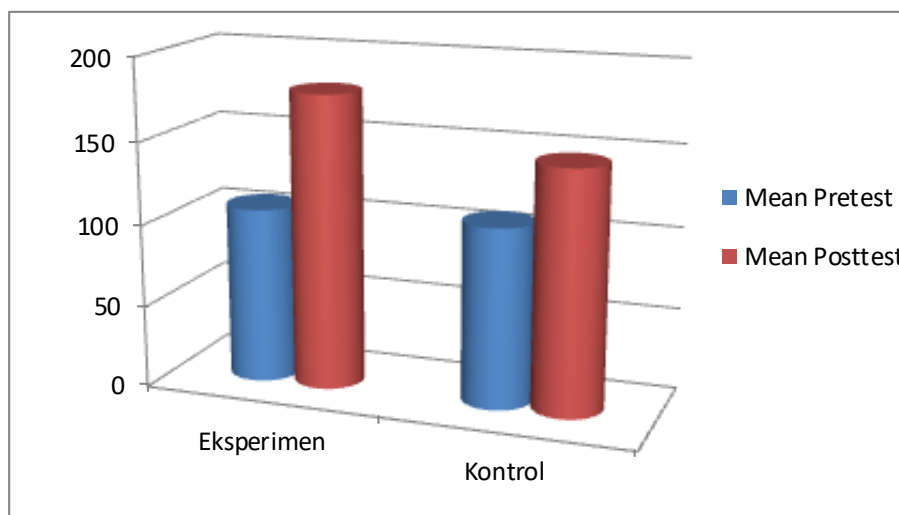


Fig 1. Comparison Pretest and Posttest Score in Experiment and Control Class

Difference was the increasing pretest and posttests score of emotional intelligence in two classes, where increasing in emotional intelligence in experiment class was higher (71,080) than control class (38,080). So it can be said that both textbooks have an effect on increasing the emotional intelligence of students, but with different levels of effectiveness.

3.2.2 Gain Analysis

After getting emotional intelligence scores, then n-Gain analysis was performed. The test results are then interpreted according to the n-Gain interpretation category. The recapitulation of n-Gain test have shown at Table 8.

Table 8. Recapitulation of N-Gain Test

Class	N-Gain Percentage	Interpretation
Experiment	63%	Medium
Control	34%	Low

In the table above, it shows that the percentage in experiment class was 63%, it can be concluded that the use of project based learning textbooks in experiment class is effective enough to increase students emotional intelligence. Furthermore, it have shown that the percentage of n-Gain in control class was 34%, interpretation concluded that the use of textbooks for students of class V revised 2017 issued by the government in the control class is less effective to improve students emotional intelligence. Based on the normalized n-Gain test, it was known that there are differences in the effectiveness of the use of project based learning textbooks developed by researchers and textbooks for students of the revised five grade 2017

issued by the government to improve the emotional intelligence of students in the experimental and control classes.

3.2.3 Independent sample test

Independent sample test was results in Table 9.

Table 9. Recapitulation of Independent t-test Results

Independent Samples Test									
Emotional Intelligence	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
Equal variances assumed	.183	.671	8.790	48	.000	28.95192	3.29391	22.32906	35.57478
Equal variances not assumed			8.790	47.041	.000	28.95192	3.29391	22.32557	35.57827

Based on the test results, it was known that the value of df (degree of freedom) is 48, then the t_{table} is 2.01063. In addition it can also be seen that t_{value} is 8.790 is greater than t_{table} ($8.790 > 2.01063$). So it can be concluded that there was a significant difference (real) between the use of textbooks based on project based learning to improve the emotional intelligence of students in experiment class with textbooks five grade 2017 revised government output used in control class.

4. Discussion

Research was motivated by emotional intelligence early on, as well as low emotional intelligence. The development research was conducted on five grade elementary school Rajabasa, Bandar Lampung. This research involves 50 students consisting of 25 at SD Negeri 1 Rajabasa as the control class and 25 students of SD Negeri 3 Rajabasa as an experiment class. The development research design used adapted the 9 stages of the research development of Borg & Gall.

The feasibility of project based learning textbooks to improve students emotional intelligence was concluded based on expert validation tests, namely material experts, media experts, linguists and practitioners. After testing, it was known that the percentage of the expert was 95%, validation test for media experts was 97%, the validation test for linguists was 90%, and the validation test for practitioners was 97%. The average percentage of four components of validation was 95%, have category "very valid", "very thorough" and "feasible". So, it was concluded that textbooks appropriate to improve students emotional intelligence. This is realized and has been proven in practice.

The textbooks for emotional intelligence is concluded based on 3 testing techniques, namely paired sample t-test, gain analysis and independent sample t-test. Pretest and posttest in experiment class was higher (71,080) than control class (38,080). The test results in experiment class have category "quite effective" (63%), while the control class have category "less effective" (34%). Independent t-test concluded difference use of project based learning

textbooks in experiment class and the government revised 2017 five grade textbooks that used in control class.

Emotional intelligence possessed by someone can be said as a "driver" for every behavior displayed. Someone who has good emotional intelligence can put ones emotions in the right portion, sort out satisfaction and regulate mood. Mood coordination is the essence of good social relationships. If someone is good at adjusting to the mood of other individuals or can empathize, then it will be easier to adjust to social relations and the environment. Emotional intelligence related to individuals distinguish their emotions from the emotions of others. This ability is used to direct the mindset and behavior that will be displayed. Emotional intelligence is the result of the process of life's journey. Formed from psychological development, and related to the learning experience gained from the environment around the individual itself. This means emotional intelligence will be better if it seeks to be developed early, so that it can be strongly attached to each individual.

Emotional intelligence possessed by someone can be said as a "driver" for every behavior displayed. Research conducted by Maurice Elias, from Rutgers University to kindergarten students to grade 6 elementary school, children who participated in emotional intelligence development programs obtained results, namely more sensitive to other people feelings, better understand the consequences of their behavior, increased ability to "take advantage" of social situations, higher self-esteem, more concerned with the surrounding social conditions, made a place dependent by peers, better able to overcome the transition to secondary school, reduced anti-social nature, self-harm and inappropriate behavior in the social environment, even after being tracked to public high school, increased skills to learn how to learn, increase self-control, social awareness, and social decision making inside and outside of school [3].

In addition, based on research conducted by Edobor & Ebiye found that emotional intelligence can predict the decline in the tendency of secondary school students in Nigeria to engage in bullying and fighting [13]. On the other hand, Rivers et al. states that emotional intelligence is a protective factor against risky behavior in students, such as the use of illicit substances, alcohol, and fighting [14].

The results of research and development textbooks shows that emotional intelligence can be improved, one of them by using project based learning. This is in accordance with the opinion of Deveci and Nunn states the very nature of PjBL, allows students to use and increase their emotional intelligence. The experiential nature of PBL also engages students in communication with others providing them with the opportunities of debriefing and re-application, which in turn supports the development of self-awareness and results in active participation as well as heightened motivation [7].

Based on research it is known that the use of textbooks based on project based learning helps students to improve their emotional intelligence, but it is still in the quite effective category. In addition, although it is not using textbooks based on project based learning in lessons still has the possibility of increasing the emotional intelligence of students. There are many causes, because emotional intelligence can be learned whenever and wherever learners are only effective will be different if the increase in emotional intelligence is considered and planned.

In addition, to the use of project based learning textbooks, there are other factors that influence the increase in students emotional intelligence. These factors can be from the family environment, non-family, physical or even psychological of each individual. Eisenberg & Morris suggest that, several factors give the effect to childrens emotional intelligence [15]. Childs personality, neurophysiology and cognitive improvement skill important factors. In

addition, Cole et al state, however that emotional intelligence can strengthen or weaken with social relations such as family and friends, but the most important is the family environment [16]. This opens up opportunities for educators, parents and the community to be involved in increasing emotional intelligence in everyday life.

5. Conclusion

Results with the title "Development of Project Based Learning Textbooks To Improve Emotional Intelligence of Students in Five Grade in Elementary Schools", it can be concluded that the product in this research and development is entitled "Student Vocational School Elementary School Five Grade Based Project Based Learning Theme 1 Animal and Human Motion Organs Subtheme 4 Project and Literacy Based Activities". Assessment of values 95%, media experts by 97%, linguists 90% and practitioners by 97%. Textbooks was developed was declared to be very valid, very complete and worthy of being used as a textbook aimed at increasing students' emotional intelligence. Project based learning textbooks could use in the learning process of students in class VA of SD Negeri 3 Rajabasa effectively to optimize students emotional intelligence. It proven by pretest and posttest score in experiment class are 107.48 and 178.56, the mean value of paired differences is -71.080. While pretest and posttests score in control class are 108.72 and 146.80, the mean paired differences were -38.080. N-Gain in experiment class was 63% (quite effective) while N-Gain in control class was 34% (quite effective). Supported also testing value of 8.790 greater than t_{table} (8.790 > 2.01063).

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