

The Use of Project-Based Learning Using Visual Art to Increase Students' Interest and Creativity

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Abstract. The aim of this study was to produce a valid, practical, and effective learning material for project-based learning using visual art to increase the elementary school students' interest and creativity. This research was conducted through three stages of 4-D model contrived by Thiagarajan et al. The results showed that in terms of the validity, effectiveness, and practicality, the learning materials developed were valid and could be implemented in the classroom. Furthermore, the students' interest improved after the implementation of the project-based learning model using visual art which resulted score 3.42 or 85.50%.

Keywords— *Project-Based Learning; Interest and Creativity*

I. INTRODUCTION

Basically, science in elementary schools aims at having students organize their knowledge and ideas about the natural surroundings gained from the experience through a series of scientific processes between investigation, compilation, and presentation of ideas [10, 11]. In today's digital era, science learning requires students to be more creative and interesting as it uses 4C's skill (21st Century skills). Based on the Law No. 22 of 2016 the learning process in the educational unit is held interactively and inspirationally and, at the same time, provides sufficient space for initiation, creativity, and independence according to the talents, interests, physical and psychological development of the learners [13]. From the results of the interviews and observations, a learning is considered less meaningful if it does not use the strategy / learning model which is in line with the material being taught. The observation results showed that teachers, in conducting a teaching-learning process, often employed the same method of all subjects so that the 4c skill was not involved. The result of observation showed that students' creative thinking ability in the learning activities was mainly low. There were only 20% of students could think fluently, 30% of them could think flexibly, 40% had original thinking ability, and 30% of them could elaborate their thinking. It was proven that the lack of variation in learning led to the students' low creativity and low interest in science.

A research on project-based learning that has been conducted by Joao Alberto Arantes do Amaral, Paulo Goncalves, Aurelio Hess (2015), showed that the project skills can improve the students' learning and managerial skills. Ciftci, Sabahattin, and Baykan (2013) conclude that, although there are significant gender differences in environmental behavior, there is no negative effect on the project learning. The results of research conducted by Lata Tomjenovic (2015) showed that the method of learning combined with visual arts activities resulted a significant increase in the students' learning outcomes. They were more active, creative, as well as having affective experience and motor activity increase. Furthermore, Slahova, Alexandra, et al in their research found that there was a linkage in the development of the creative imagination of elementary school students and creative activities when describing visual art portraits [8].

Based on the results of the existing research, the project-based learning using visual art was then developed to increase the students' interest and creativity. Th study used a project-based approach combined with visual arts activities to increase elementary school students' interest and creativity. The project activities begin with fundamental questions, planning, project implementation rules, scheduled activities, monitoring student project progress, assessing students' work, and the process is ended with evaluating student experience. In the project activities carried out, visual art activities were combined so that the students were more interested in the teaching and learning activities. The study was conducted using three stages of 4-D model proposed by Thiagarajan et al. model covering defining, designing and developing stages. The implementation of visual arts in the project-based learning model resulted in the improvement of interest and creativity of students in science lesson. The students become more interested and creative in the teaching and learning process. Furthermore, the boredom in learning activities was slowly replaced by the interesting activities of students in every process of teaching and learning.

II. METHOD

This study focused on the software development model learning *project-based learning using visual art* that referred to a 4-D model. However, this study only used 3D model with the qualitative design which aims at describing or revealing in detail about the process and learning outcomes related to the elementary students' interest and creativity of learning science with the light material property.

The subjects in this study were the students of grade IV of elementary school with 20 students in total for the material of nature of light. The characteristics of the students as the subject of this study were the students who had low interest in science and ability to think creatively. The teaching-learning process tended to be teacher-centered so that students' creativity in thinking skills were poorly trained resulting in the low interests in doing the activities.

The analytical techniques applied in this study were descriptive quantitative and qualitative, which analyzed the students' learning activities and interest in learning and creativity of the students. The analysis used presentation technique with the following formula:

$$P = \frac{\sum K}{\sum N} \times 100\%$$

The analysis of student learning activities was obtained through the observation sheet filled by the observer during the learning activities. The student learning activity sheet consisted of nine indicators that must be observed by the observer by giving a score of 1 to 4. Meanwhile, the analysis of data on the students' interest obtained was done using questionnaires which consisted of 20 questions with four indicators of interest as follows: feeling good about teaching science, interest towards science subjects, attention to the teacher, and the spirit of students in participating in science lessons [14]. Students' interest questionnaires in learning were filled by the students at the end of the learning activity by cross-marking (x) with two optional choices, yes or no. The analysis on the students' creativity was taken using the creativity test in the form of pretest and posttest. The aspects represented the creative thinking abilities were *originality*, *fluency*, *flexibility*, and *elaboration*.

Furthermore, to determine the level of sensitivity, pre-test and post-test on students' creativity tests performed using the N-gain was analyzed as follows.

$$N\text{-gain} = \frac{\text{skorposttest} - \text{skorpretest}}{\text{skormaksimal} - \text{skorpretest}} \quad (\text{Djamarah, 2010})$$

III. RESULTS AND DISCUSSION

3.1 Learning activity

The results of analysis in student learning activities could be seen from the questionnaire that had been filled by the observers. In the learning model of *project-based using visual art*, it was obtained some activities including paying attention to the teacher which got the highest average score of 19.2%, followed by answering questions given by the teachers which got 12.8%, doing worksheets provided by the teacher which

got 14.1%, cooperating with friends in the group with 11.9 %, discussing problems encountered in groups which got 11.6%, taking opinions among friends in groups with percentage 10.8%, making decisions on all the correct answers with percentage 5.1%, presenting answers in front of class with percentage 4.8%, and responding to friends' answers which got 9.7%. The results are shown in Fig 1. below:

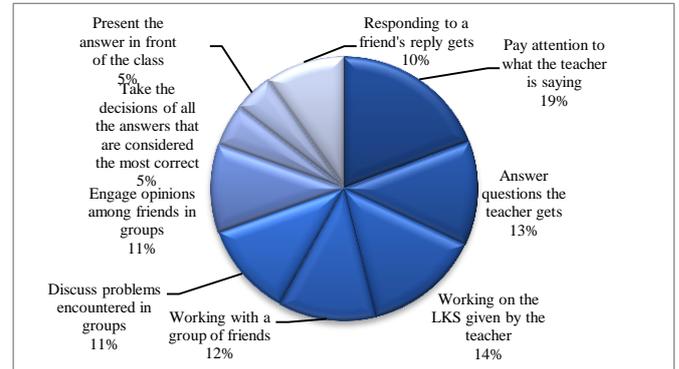


Fig. 1. Results of Student Learning Activity Analysis

Based on the results of the analysis on student learning activities, it could be concluded that the teaching and learning activities were more active as marked with the number of students who answered every question from the teacher. In addition, the students were enthusiastic in working on any given activities sheets. They also cooperated better with the other students in every learning activities. In line with the opinion of Ahmadi, a group learning is an activity conducted by two or more people to discuss a subject matter to be solved [15]. The process of learning through Project-based using visual art was done in groups and was proven to be successful in improving the students' learning activities.

3.2 Interest

The result of data analysis on the students' interest in learning analysis are presented in the following table.

TABLE I. THE RESULT OF STUDENTS' INTEREST ANALYSIS

No.	Name	Total Aspect Interest	Total Aspect Observation	Pro-sentance	Criteria
1	AJR	19	20	95%	Very interested
2	AHY	17	20	85%	Very interested
3	ARP	18	20	90%	Very interested
4	AS	18	20	90%	Very interested
5	AO	16	20	80%	Very interested
6	DF	16	20	80%	Very interested
7	ES	16	20	80%	Very interested
8	FA	18	20	90%	Very interested
9	FS	16	20	80%	Very interested
10	GB	20	20	100%	Very interested
11	MRC	19	20	95%	Very interested

No.	Name	Total Aspect Interest	Total Aspect Observation	Pro-sentance	Criteria
12	MN	12	20	60%	Have a good interest
13	MM	20	20	100%	Very interested
14	MRK	17	20	85%	Very interested
15	NRR	16	20	80%	Very interested
16	RAF	17	20	85%	Very interested
17	RWA	20	20	100%	Very interested
18	RDS	16	20	80%	Very interested
19	WL	18	20	90%	Very interested
20	ZM	13	20	65%	Have a good interest
Total		342	400	85.5%	Very interested

TABLE II. THE RESULT OF STUDENTS' CREATIVITY ANALYSIS

Aspects	Pretest	Posttest	N-Gain
Fluency	68,8	96,3	0,88
Flexibility	65,0	90,0	0,71
Originality	67,5	91,3	0,73
Elaboration	58,8	88,8	0,73

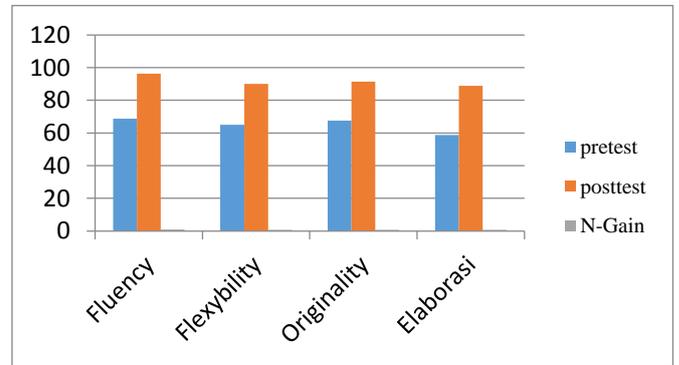
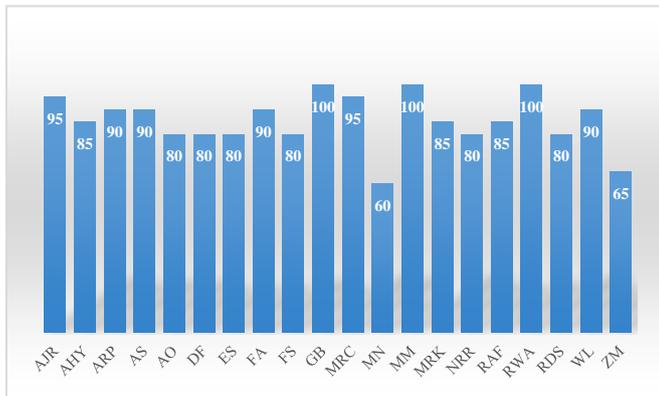


Fig. 2. The Result of students' interest

Fig. 3. The Result of Students' Creative Thinking Ability Analysis

The students, along the process of teaching and learning, filled the questionnaires given. The questionnaire consisted of 20 items with 15 positive statements of yes answer and 5 negative statements with no answer. The result of the students' interest analysis got the average score of 3.42 or 85.5% with *very interested* criteria. The students had a positive interest towards the project-based learning models using visual art developed. Crow & Crow [3] state that interest relates to the style of motion that encourages a person to deal with people, objects, activities, experiences that are stimulated by the activity itself. Therefore, the high interest will have an impact on the high creativity as well.

The results of the analysis showed that creative thinking ability of the students scored by *N-gain* showed that their ability to think fluently was at 0.88 with high criteria, to think flexibly get score 0.71 with the high criteria, to think originally got score of 0.73 with high criteria, and to think with elaboration got *N-gain* score of 0.73 with high criteria. Based on the existing results, it could be concluded that there was an increase in students' creative thinking ability in the learning activities undertaken. The students became more creative than the previous condition. Munandar states that creativity comes from inside and outside the individuals themselves. Furthermore, an environmental condition that can nurture the creative power of the individual the environment where students learn (school) was needed [6].

3.3 Creativity

The data on the students' creative thinking ability are presented in the following table.

3.4 Learning outcomes

The data on the students' learning outcomes can be seen in following table.

TABLE III. THE RESULT OF PRE-TEST AND POST-TEST ASSESSMENT OF STUDENTS' LEARNING OUTCOMES

No	Name	Result				N-gain
		Value		Completeness		
		Pretest	Posttest	Pretest	Posttest	
1	AJR	40	80	TT	T	0.67
2	AHY	43	87	TT	T	0.77
3	ARP	40	83	TT	T	0.72
4	AS	33	80	TT	T	0.70
5	AO	43	90	TT	T	0.83
6	DF	47	80	TT	T	0.62

No	Name	Result				N-gain
		Value		Completeness		
		Pretest	Posttest	Pretest	Posttest	
7	ES	30	73	TT	T	0.61
8	FA	37	87	TT	T	0.79
9	FF	43	83	TT	T	0.70
10	GB	67	98	TT	T	0.94
11	MRC.	57	86	TT	T	0.67
12	MN	63	90	TT	T	0.73
13	MM	63	98	TT	T	0.95
14	MRK	60	83	TT	T	0.58
15	NRR	50	80	TT	T	0.60
16	RAF	50	90	TT	T	0.80
17	RWA	33	83	TT	T	0.75
18	RDS	43	83	TT	T	0.70
19	WL	57	87	TT	T	0.70
20	ZM	53	80	TT	T	0.57
Total		952	1701	TT	T	0.72

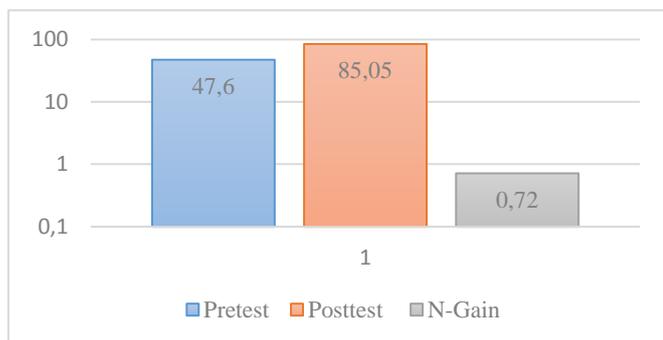


Fig. 4. The Result of PHB

The students' interest and creativity toward the learning process were increased and it had made a positive impact on their learning outcomes. It was proven that the students' learning outcomes increased after applying the learning activity through project-based learning model using visual art. In the implementation of pretest and posttest that had been done by students, the result showed that the learning outcomes (PHB), increase. It could be seen from the average N-gain score the of pretest and posttest score that the PHB got score 0,72 with high criterion. In line with Rizema (2013), good pedagogy engages students to do experiment on their own, try to manipulate signs and symbols, try to ask questions, find their own answers, and compare their findings with other students. In addition, Brunner [7] states that learning is a process whereby a student is assisted by a teacher or other person who has higher ability to solve a particular problem which thereby exceed his capacity.

IV. CONCLUSION

In conclusion, creative thinking abilities of the students after the implementation of project-based learning using visual

arts are getting better. It can be seen from the increase of students' interest in the teaching and learning process. In order to develop the ability to think creatively and to encourage the students' interests, a learning should be designed in the form of project that challenge students to be more creative, imaginative and even try to be a designer in every material being taught.

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