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The Effect Of Problem-Based Learning Model With Audio Visual Media On The Learning Outcomes Of The Students On Environmental Pollution Material

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ABSTRACT

Education plays a very important role and factor in human life as it becomes a vehicle to create qualified human resources in terms of knowledge and skill. In implementing of this educational objective, a learning model is required to be able to motivate the students in learning so that the students' cognitive and effective increase. Problem-based learning model with audio visual media is considered to be one of learning models which can improve the students. This study aimed to determine the effect of problem-based learning model with audio visual media on cognitive learning outcomes of the seventh grade students at SMP Negeri 9 Jember on environmental pollution subject. Quasi experimental research with control class and experimental class was applied in this research. In the experimental class, learning activity was carried out by applying problem-based learning model with audio visual media whereas Discovery Learning model with image as its media was taught in the control class. The data of the students' cognitive learning outcomes were obtained through the pre-test and post-test scores, the students' affective learning outcomes were collected through direct observation in classroom by using observation sheet consisting of five aspects in which they were activeness, responsibility, collaboration, discipline, and interaction. The application of problem-based learning model with audio visual media had a significant effect with a probability as much as 0,000. The affective learning outcomes influenced significantly with the probability value of the T test was 0,000.

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INTRODUCTION

Education plays a very important role and in human life since it is a vehicle in creating qualified human resources in terms of knowledge and skills in order to have the ability to think critically, creatively, and openly. Enhancing the quality of human resources is the objective or target in education to face the globalization era. In this era of globalization, qualified human resources will be the nation's main foundation in competition. Therefore, the development in the education sector should be taken as first priority for the government to create the intellectual generations^[3].

Good education does not only prepare students for a profession or position but also for solving the problems they face in their daily lives. The ability to think critically is one of the indicators that must be achieved by students to have good education^[14]

Problem-based learning model is a learning model that emphasizes on problem solving or problem as a starting point or basis in the learning process. Widjajanti (2011) states that in problem-based learning, teacher is capable to develop students' learning motivation to be better, provide opportunities to learn by practicing intellectual skills, thinking skills and scientific attitude^[14]. It is in line with Siswono's (2009) statement who claims that problem-based learning can develop students' critical thinking skills, practice problem-solving skills and improve the mastery of subject as problem-based learning is applied to develop higher-order thinking skill in which critical thinking is an embodiment of higher-order thinking (Higher Order Thinking). [10]

Biology is a material containing a lot of analysis in building the concept (Munif, 2009). One of the biological materials that is complex in learning is the material of environmental pollution. This material arises many problems. In relation to the observation and interview conducted in November 2017 regarding to the process of science learning at SMP Negeri 9 Jember for science teachers, it showed that the teachers began to use learning model in which students were trained to develop their concepts of Discovery Learning model. However, not all students are able to receive and carry out well what is demanded by the teacher, the result of this learning model was less optimal on its implementation

The implementation of the Discovery Learning model that was less optimal caused the students to receive the material only without being able to apply their knowledge in daily life. The mental ability that is trained in learning generally only focuses on understanding the knowledge, logical reasoning and memory. The teacher has not directed many students to think critically in their teaching and learning activities so that students' ability to solve problems and develop concepts has not trained maximally as they do not get much attention, training and stimulation in the classroom. Learning activities tend to train the students only to memorize and solve written problems. Good education will not be achieved by the students through this way of learning.

In the application of problem-based learning, obstacles are still found, one of them is lazy students, the goal of problem-based learning is not achieved because the students fail to understand the concept^[13]. From these obstacles, problem-based learning must be

accompanied by the use of appropriate media to avoid misconceptions. Learning media in teaching and learning process that have a significant function, because not all learning experiences can be obtained directly. The media can be used to make it easier to provide concrete, precise and easy understood knowledge ^[9]

The media used by the teacher must be related to the learning objectives that have been established to stimulate and foster students' interest in learning which is able to accelerate the process of students' understanding of the learning content [12]. Audio visual media is chosen as a medium in problem-based learning because it can encourage students to analyze what the media provide. Audio visual media is a medium that combines two abilities, namely auditive (hearing) ability and visual ability (vision). By combining the two sensory abilities in the learning process, the qualified results will be better. According to Sanaky (2013), audio visual media is considered to be able to help problem-based learning in realizing a good education, where the presence of audio visual media can help students build concepts before finally entering the stage of problem solving and critical thinking. Therefore, the research entitled the effect of problem-based learning model by using audio visual media on student learning outcomes was carried out^[7]

METHODOLOGY

This research was a quantitative research by using quasi-experimental (quasy experimental) as not all external variables influencing the research can be controlled by the researchers ^[11] since the research subjects have naturally been in a whole group, such as groups of students in one class. The application carried out in this study was learning activity in both experimental and control class.

This research was an experimental quasy study, a research by using problem-based learning model with audio visual media was implemented in the experimental class and the general learning which was Discovery Learning learning model with power point as its media was done in the control class. To make it clear, the research design is provided as follows:

E	Q ₁	X ₁	Q ₂
K	Q ₃	X ₂	Q ₄

Notes :

- E : experimental class (a class that used problem-based learning model with audio visual media)
- K : control class (a class that implemented *discovery learning model* appropriate for the one which was already applied at SMP Negeri 9 Jember)
- Q₁ : *pre-test* result of experimental class
- Q₂ : *post-test* result of experimental class
- Q₃ : *pre-test result* control class

- Q₄ : *post-test* result of control class
- X₁ : the use of problem-based learning with audio visual media
- X₂ : the use of *discovery learning model*

Data collection methods used in this study were interview guide, observation sheet for the assessment of affective learning outcomes, students' cognitive test results (pretest and post test). Interview was conducted with the teacher of natural science at SMP Negeri 9 Jember. Observation was carried out directly during the learning process which included activeness, responsibility, collaboration, discipline, and interaction done by the observer. The results of students' cognitive tests (pretest and post test) were used to determine the effect of the application of problem-based learning models with audio visual media on students' cognitive learning outcomes in the control class and experimental class.

Based on the stated research objectives, statistical analysis techniques were used to calculate the obtained data. The assessment of cognitive learning outcomes was measured in the score range of 1 - 4, each score had been set in the assessment rubric that was made previously, then each indicator was calculated and tested by using the following formula:

$$Score = \frac{\text{obtained scores}}{\text{maximum scores}} \times 100$$

The effect of problem-based learning model with audio visual media on cognitive learning outcomes can be tested by using ANAKOVA statistical tests in SPSS because in cognitive learning outcomes there was a reinforced variable (covariate) namely the pretest value. In ANAKOVA testing, the data must be normally distributed, variations between the treatments must be homogeneous. The assessment of affective learning outcomes was measured through several indicators with a scale range of 1 - 4 in which each scale had been arranged in the rubric of the study of affective learning outcomes which then each indicator was calculated and tested by using the following formula.:

$$Score = \frac{\text{obtained scores}}{\text{maximum scores}} \times 100$$

Table 1. Criteria of Score

Score	Criteria
> 70	Very Good
$60 < SA \leq 69$	Good
$50 < SA \leq 59$	Moderate
≤ 50	Less

The test carried out on the effect of problem-based learning model with audio visual media on affective learning outcomes was Independent Sample t-test on affective learning outcomes derived from the aspects of attitude assessment in the form of various behaviors including activeness, responsibility, collaboration, discipline, and interaction.

RESEARCH AND DISCUSSION

a. The Result of sample determination

The sample was determined through random sampling method with the requirement that normality test and homogeneity test were tested based on the results of midterm test of the students on grade VII at SMP Negeri 9 Jember to find out whether or not the data were normally distributed and homogeneous. The results obtained from the results of the normality test, the six classes were normally distributed. Then the results gained from the homogeneity test were all homogeneous classes with significant values ($p = 0.216$), $p > 0.05$ indicated that the data were in the same variant. The next step after homogeneous data were confirmed, VII D was selected as the control class and VII E as the experimental class

b. The Implementation of Lesson Plan

The learning implementation in this study was also assisted by three observers and a teacher of grade VII, the seventh grade students of SMP Negeri 9 Jember. According to the data taken by the observer, the learning in this research had taken place appropriately and followed the steps written in the lesson plan. This can be proven from the teacher's observation of the lesson plan implementation sheet. This affected the research to review the accuracy of the obtained data.

The Effect of Problem Based Learning Model with Audio Visual Media on Student Learning Outcomes

a. Cognitive learning outcomes

The cognitive domain learning outcome was an aspect that determined the achievement of student learning outcomes. The assessment of cognitive learning outcomes in this research used pretest and posttest

Table 2. The Increase Percentage of Cognitive Score of Experimental and Control Classes

Class	Total	The Mean of <i>Pre-test</i> ±SD	The Mean of <i>Post-test</i>	Difference
Experimental	28	44,50±7,69	76,00±10,87	31,50
Control	26	39,07±12,23	53,96±13,37	14,89

Based on the table, it is known that the mean difference between the pre-test and post-test experimental class was higher than the control class which was 31.50 while in the control class was equal to 14.89. Before the covariance analysis (ANAKOVA) was carried out, the normality test was performed to determine whether the data obtained had a normal distribution or not. Covariance analysis (ANAKOVA) was calculated to determine whether or not the effect of differences in treatment of problem-based learning models with audio visual media on cognitive learning outcomes with covariance in the form of Pre-test scores. ANACOVA test results can be seen in the following table.

Table 3. ANACOVA test results

Source	The Number of squares type III	df	The Mean of Squares	F	P
Corrected Model	7704.853 ^a	2	3852.427	30.277	.000
Intercept	5676.735	1	5676.735	44.614	.000
Pretest	1514.138	1	1514.138	11.900	.001
Group	4566.016	1	4566.016	35.885	.000
Error	6616.529	52	127.241		
Total	250875.000	55			
Corrected Total	14321.382	54			

Based on Table 3, it can be seen that the probability of the effect of differences in the treatment of learning media on the student's final value was 0.001. So that the probability can be stated <0.05 then H1 was accepted, it can be obtained that problem-based learning model with audio visual media significantly influenced the students' cognitive learning outcomes.

b. Affective Learning Outcomes

Affective domain learning outcomes of students in learning environmental pollution material by using problem-based learning model with audio visual media were obtained from the observation sheets made by researchers. The observation sheets consisted of five indicators, namely activeness, responsibility, cooperation, discipline, and interaction. The mean of affective scores can be seen in the table below.

Table 4. The Mean of Each Aspect of Affective Learning Outcomes in Experimental Class

No.	Aspect	Mean Score \pm SD	Criteria
1.	Activeness	69,15 \pm 0,62	Good
2.	Responsibility	71,25 \pm 0,65	Very Good
3.	Cooperation	63,75 \pm 0,62	Good
4.	Discipline	80,25 \pm 0,49	Very Good
5.	Interaction	66,75 \pm 0,67	Good
	Mean	70,23 \pm 5,59	Very good

As shown on the table above, it was found that the most affective aspect applied by students in the experimental class were the aspect of discipline with 80.25 ± 0.49 as its value, whereas the affective aspect with the lowest value was in the aspect of Interaction with value as equal to 66.75 ± 0.67 .

Table 5. Criteria of Aspect

No.	Aspect	Mean Score \pm SD	Criteria
1.	Activeness	55,75 \pm 0,76	Moderate
2.	Responsibility	61,50 \pm 0,58	Good
3.	Cooperation	66,25 \pm 0,68	Good
4.	Discipline	64,25 \pm 0,57	Good
5.	Interaction	56,50 \pm 0,53	Moderate
The Averaga		60,85 \pm 4,14	Good

As described from the table above, the affective aspect that most widely applied by the students in experimental class was the aspect of collaboration with value as much as 66.25 with deviation of 0.57 while the affective aspect with the lowest value was in the active aspect with 55.75 as its value and 0.76 as its standard deviation.

The analysis results of different treatment test of problem-based learning model with audio visual media on students' affective learning outcomes can be seen in the following table

Table 6. analysis results of different treatment test

T	Df	P	Mean Difference
3,65	52	,001	9,24
3,64	51,47	,001	9,24

Thus, it can be interpreted based on the assumption of the same variant, between the experimental class and the control class have significant difference on the value of affective learning outcomes or can also be interpreted that it has the effect of differences in treatment of problem-based learning model with audio visual media on the value of students' critical thinking skill in environmental pollution material.

The mean difference between pre-test and post-test either in the control class or experimental class showed that the cognitive value of control class increased as much as 14.89 and 31.50 for the experimental one. It revealed that the mean in the experimental class was higher than the one in control class. Furthermore, the anakova test was conducted to see the effect of the treatment, but normality test and homogeneity test were carried out first. The results of the normality test in the experimental class showed the probability of the pre-test value was 0.25 and the post-test value was 0.69. In the control class, the obtained pre-test was 0.97 and the post-test value was 0.78, it indicated that the probability > 0.05 which referred to the value of the Pre-test and Post-test that were normally distributed. Then the homogeneity test was conducted to find out whether or not the data had the same variance. The homogeneity test results showed the probability of 0.93 (probability > 0.05), it could be stated that H_0 was accepted in which it was homogeneous. It can be seen from the ANAKOVA test result in table 4.6. The results

showed that significant value was 0.001 where $p < 0.005$, it pointed out that H_0 was rejected. It could be interpreted that there was an effect of the differences of the learning model treatment on the students' cognitive learning outcomes. So, it came to a conclusion that the implementation of problem-based learning model with audio visual media was suitable to be taught in learning environmental pollution because it was proven that there was significant effect.

This significant result was obtained because of the application of problem-based learning model with audio visual media in the experimental class, the students found it more interested in learning as the use of audio visual media was paired to problem-based learning model which made the classroom atmosphere more alive. It was due to the learning video that had the students more interested in learning the lesson taught by the teacher. The students were interested in paying attention to the video then they were filled by the stimulus to study through problem-based learning model according to the syntax. In problem-based learning model, there was a syntax of "developing and presenting the work", at this stage the researcher asked the students to make a summary containing the analysis of the problems and conclusions from the displayed audio visual media. It was assumed that by writing down the existing problems, the students would be easier to remember what they have learned. As stated by Kenneth, (1984) writing activity makes the functions of the brain in accordance with the ability to memorize and understand a lesson becomes sharper. taking notes with the handwriting method would help them memorize the lessons longer. [6] According to him, writing makes the brain well organized, the brain is also easier to record things that have been written by the hand. Another reason is, by writing, humans will automatically read their writing longer so it will be easier for them to remember.

So, it could be said that the combination of problem-based learning model with audio visual media was able to change the students who were lack of interest in learning to be the ones who were interested in learning well. As stated by Kustandi and Sutjipto (2013), audio visual media is a cheap and affordable learning media. Besides, it also attracted and motivated students to learn the material more, audio visual can be used to: (a) develop listening and evaluate the things that have been heard; (b) organize and prepare discussions or debates by expressing opinions of experts; (c) make the model to be imitated by students, and (d) prepare interesting variation and changes in the level of speed 54 learning about a subject or a problem.

The high cognitive learning outcomes of students who were taught by using problem-based learning model were caused by the students who were required in doing the process of solving the problems presented by the teacher. By presenting the problem, the students would feel challenged and interested in the learning process. This is in line with an opinion stated by Uno (2012), a person who feels confident of is able to face challenges is a person who will be encouraged in doing the activity. In addition, the initial activities through problem orientation to the students were intended to attract students' attention so that they were able to construct their knowledge with the material which was

going to be taught and related to the surrounding environment. [5] It would make the students more enthusiastic in carrying out learning and material presented by the teacher and absorbed it well.

The results of the assessment of students' affective learning outcomes conducted during the three meetings in the experimental class and control class were described in Table 4.7 and Table 4.8 was about the average value of each aspect of students' affective assessment, the average results of each aspect in the experimental class were higher than the average from each aspect in the control class. The experimental class that applied problem-based learning model with audio visual media made students reduce their boredom in doing any unnecessary things because through this learning model, the students were more active in solving a problem within group, while the students in control class whose their concentration would be disrupted and made them less concentrate as the materials were not fully absorbed.

This was in line with the theory proposed by Aizikovitsh (2015), problem-based learning is an effective approach to help the students foster their interest in learning and integrate the previous knowledge and concepts in the classroom. The control class reached the value of affective learning outcomes lower than the experimental class, because discovery learning model did not make the students active in learning. There should be two direction interaction in learning process which become one direction as it was due to the students' lack of interest in carrying out learning, and this class only used image as its media (visual) rather than audio visual media taught in the experimental class. Audio visual media was able to attract their interest higher compared to image only [8]. The learning method used by the teacher became vital since the ability and courage of the students in expressing opinions were needed to be stimulated by the teacher so that students were motivated to give their opinion related to the lessons ^[1].

In the experimental class, it was found that the highest score of affective aspect was in the discipline aspect covering the students' attitudes during the teaching and learning process, the timeliness of the students to enter the class, the uniform neatness based on the school's rule, and the students' attitudes in the classroom either they were joking with their friends or being serious in the learning process. This happened because in the implementation of problem-based learning with audio visual media, the students were more active in following the lesson, so that there was no time to play and discuss something out of the lesson. The second indicator was the responsibility. In this indicator, the assessment was the students' responsibilities for the task given by the teacher and the students' seriousness in carrying out the task. The students who were serious in doing the task got higher score than those who were not serious and did not do the task well.

The third indicator was the activeness, this activeness indicator covering the students' activeness in asking and answering the stimulation from the teacher. In assessing this aspect, it emphasized on the basic ability to communicate and the student's braveness to communicate with the teacher in the learning process. The students who were active in asking a problem to the teacher got higher score than those who were silent during the learning activity. Similarly with the forth that was the interaction. In this

indicator, it emphasized on how the students communicated and discussed with their groups to solve a problem. The students who were active in delivering their ideas got better score than those who were passive. The last indicator was the cooperation, in which in this indicator emphasized on how the students cooperated in their teams to do the task given by the teacher. For the group who interacted and helped each other more got better score than those who did not participate in the discussion in the group.

The last step was to do a different test by using Independent Sample t-test to know whether or not there was a different effect of using problem-based learning with audio visual media on the students' affective learning outcomes. The result of the T test as shown in the table 4.9 could be concluded that there was a significant difference between the students' affective outcomes in the control group and the experimental group. This could be seen from the significant value which was 0.001 ($p < 0.05$) which means H_0 was rejected and H_1 was accepted. Therefore, it indicated based on the assumption of the same variant, there was a significant difference of the students' affective outcomes or it could be interpreted that there was a different effect of using problem-based learning model with audio visual on the student's critical thinking skills outcomes in environmental pollution material.

CONCLUSION

The problem-based learning model with audio visual media gave a significant effect ($p = 0.001$) on the 7th grade students' cognitive outcomes at SMP Negeri 9 Jember. The problem-based learning model with audio visual media had a significant effect on the 7th grade students' affective outcomes at SMP Negeri 9 Jember. Based on the Sample T-test, it was found that the significant value was 0.000 in which ($p < 0.05$) which means there was a differences of the treatment on the students' affective outcomes.

Based on the observation result and the study that had been conducted, the researcher would like to give some suggestions, as follows. 1) In the implementation of this research entitled The Effect of Problem-Based Learning Model with Audio Visual Media on the Students' Critical Thinking Skill and Outcomes needs to be prepared well, so that all the arranged plans can be implemented and to prevent any obstacle during the implementation. 2) For the natural science teacher of SMPN 9 Jember, for future learning is expected to use problem-based learning model with audio visual more. 3) For the future researcher, it is expected to develop the innovation for the problem-based learning and it is also expected that this research can be used as a reference to develop the problem-based learning model.

REFERENCES

- [1] Adawiah R, Fatimah dan Ernita T. 2016. "Hubungan Cara Belajar Dengan Prestasi Belajar Siswa Dalam Mata Pelajaran PKN Pada Siswa Kelas X Sma Negeri 1 Banjarmasin". *Jurnal Pendidikan Kewarganegaraan.*, Volume 6 Nomor 11.

- [2] Aizikovitsh-Udi, E d & Cheng D, 2015. Developing Critical Thinking Skills from Disposition to Abilities: Mathematics Education from Early Childhood to High School. Scientific Research Publishing: *Creative Education*, 6, 455-462. Diakses dari <http://www.scrip.org/journal/ce>.
- [3] Arsyi, A. R. 2011. *Penggunaan Peta Konsep untuk Mengatasi Miskonsepsi Siswa pada Konsep Jaringan Tumbuhan*. Jakarta: Universitas Islam Negeri Syarif Hidayatullah
- [4] Chatib, Munif. 2011. *Gurunya Manusia: Menjadikan Semua Anak Istimewa dan Semua Anak Juara*. Bandung: Mizan Pustaka
- [5] Eggen dan Kauchak. 2012. *Strategi dan Model Pembelajaran*. Alih bahasa oleh Satrio Wahono.. Jakarta: Indeks
- [6] Kiewra, K. Levinson, E. M., Ohler, D. L., Caswell, S.1998.Six Approaches to the Assessment of Career Maturity. *Journal of Counseling and Development*, (76) 4, 475-482
- [7] Sanaky, H. AH. 2013. *Media Pembelajaran Interaktif-Inovatif*. Jogjakarta: Kaukaba.
- [8] Sani, Ridwan. 2013. *Inovasi Pembelajaran*. Bumi Aksara: Jakarta
- [9] Sanjaya, W. 2006. *Strategi Pembelajaran Berorientasi Standar Proses Pendidikan*. Jakarta: Kencana
- [10] Siswono, T. Y. 2007. *Penjenjangan Kemampuan Berpikir Kreatif dan Identifikasi Tahap Berpikir Kreatif Siswa dalam Memecahkan dan Mengajukan Masalah Matematika*. Surabaya. Unesa Press.
- [11] Sugiyono, 2014. *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif dan R&G*. Bandung: Alfabeta
- [12] Uno, HB dan Nurdin, Muhammad. 2011. *Belajar dengan Pendekatan Pembelajaran Aktif Inovatif Lingkungan Kreatif Efektif Menarik*. Jakarta: Bumi Aksara
- [13] Trianto. 2009. *Mendesain Model Pembelajaran Inovatif-Progresif: Konsep, Landasan, dan Implementasinya pada Kurikulum Tingkat Satuan Pendidikan (KTSP)*. Kencana, Jakarta.
- [14] Widjajanti, D. B. 2011. *Problem Based Learning dan Contoh Implementasinya*. Makalah disajikan pada Seminar Pendidikan, UNY, Yogyakarta, 10 Maret 2010

