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The Application of *Bioedutainment* Strategy Using *Uno* Cards on the Students' Learning Result in Invertebrate Material at Sma Institut Indonesia

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Abstract

This study aims to examine the effect of applying uno-assisted bioedutainment strategy on students' learning outcomes in invertebrate material. This study uses a non-equivalent control group design. The population of this study is the students of class X SMA Institut Indonesia Semarang. X.4 and X.5 were selected as samples using purposive sampling technique. The result of the study showed that there were significant differences in the data of the second post tested class. Improvement of cognitive learning outcomes in both classes was tested by using N-gain to determine the magnitude of the improvement in student learning outcomes before and after being given the treatment of uno-assisted bioedutainment strategies on invertebrate material. The experimental class has an average pretest of 34,17 and an average posttest of 75,53 with an N-gain 0gf 0,63. The control class has an average pretest of 32,06 and average postest of 70,42 with N-gain 0,56. Both classes belong to the medium category. Bioedutainment strategy using uno card motivate the students to be actively involved in the learning process.

The conclusion of this study is that the learning using uno cards in invertebrate material has a positive effect on the students' learning outcomes.

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INTRODUCTION

Invertebrate is one of the materials taught in biology subjects in grade X. Invertebrate material is very complex and its broad scope requires the students to understand the material. Based on the result of the questionnaire, 53% of students found it difficult to properly understand the invertebrate material. The lack of the students' learning outcomes are caused by many factors, one of which is the implementation of classroom learning which is mostly teacher-centered whereas the students merely listen and jot down the teacher's explanation. The use of teaching aids is also less varied so most students think that invertebrate material is difficultsince they only imagine without acknowleding the concrete samples. Therefore, an appropriate learning strategy is required in order to strengthen the students' understanding in the invertebrate material.

The bioedutainment strategy contains several elements including knowledge learning, scientific processes, work skills, collaboration, educational games, competition, challenges and sportsmanship. All these elements should be packaged in an entertaining and enjoyable learning (Mulyani et al, 2008). The implementation of a bioedutainment strategy can be done outside the classroom or in the classroom. The implementation of this learning strategy can be combined with various learning methods such as discussions, experiments, educational games, role playing, simulation, word square, or exploring the environment around the school. The application of the bioedutainment strategy in this study uses game as the media in the form of uno cards that contain pictures and statements about the characteristics of invertebrates. Robert (2007) states that uno card games can make it easier for students to understand the material being taught. It is expected tha the application of the UNO card in bioedutainment strategy will strengthen the concept, build and review the knowledge owned and motivate the students' active role in the group discussion by collaborating in finding pairs of statements / images contained in the card and match them. For this reason, it is necessary to conduct a research entitled "Application of Bioedutainment Strategy Using UNO Cards on Students' Learning Outcomes in Invertebrate Materials at Institut Indonesia High School".

RESEARCH METHOD

This research was conducted at SMA Institut Indonesia Semarang in the even semester of 2017/2018. This research is a quasi experimental study with non-equivalent control group design. The population of this study isthe students of class X. X.4 and X.5. selected by using a purposive sampling technique. The independent variable in this study is the UNO-assisted bioedutainment strategy, while the dependent variable in the study is the students' learning outcomes in invertebrate material. The data analyzed in this study are data on student learning outcomes, learning activities, student responses, and teacher responses. The retrieval of learning outcomes data are the pretest and posttest taken by using the test method in the form of questions that have been previously determined their validity, reliability, power difference, and level of difficulty. The data of the students' activitywas obtained through observation method using observation sheets as the instrument. The data of the students' and teacher's responses was taken by using the questionnaire method a questionnaire as the instrument. The students' learning outcomes were analyzed in quantitative descriptive methods including normality, homogeneity, t test and N-gain test, while the result of students' activity was analyzed in qualitatively descriptive method.

RESULT AND DISCUSSION

The result of the analysis in the students' learning outcomes indicates the initial competence of the experimental and control classes which are not much different because it has an

almost equal pretest. The results of the analysis of the average posttest score after learning in the experimental class is higher than the average in the control class.

Tabel 1 The score of*pretest-posttest*in experimental and control class in invertebrate material

Data	Control class		Experimental class	
	Pretest	*Posttest*	*Pretest*	*Posttest*
Highest score	53	81	53	83
Lowest score	20	58	20	60
Average	32	70	34	75

The posttest scorewas then analyzed by testing the normality and homogeneity as a prerequisite for conducting the t test analysis. Based on the Kolmogrov-Smirnov, one sample test with $\alpha = 0.05$, it shows that the sig value> 0.05 so that the posttest data obtained in the experimental class and the data control class are normally distributed. The homogeneity test in this study uses the levene's test with $\alpha = 0.05$. The result shows that the sig value> 0.05. This stated that the result of the posttest of both classes had same varias samples. The normality and the homogeneity analysis in the prerequisite testshowed that the data was normal and homogeneous, so that the next test, the t test, can be done. The analysis shows that there is a significant difference between the posttest scores of the experimental class and the control class. The result of the posttest in the experimental class is significantly better than the control class. The improvement of cognitive learning outcomes in both classes was tested by using N-gain to determine the magnitude of the improvement in student learning outcomes before and after being given the treatment of uno-assisted bioedutainment strategies on invertebrate material. The experimental class has an average pretest of 34.17 and an average posttest of 75, 53 with an n-gain of 0.63. The control class has an average pretest of 32.06 and an average posttest of 70.42 with n-gain of 0.56. Both classes belong to the medium category.

Learning invertebrateby applying bioedutaiment strategy usinguno cardsgives a positive effect on the students' learning outcomes. The impactcanbe seen from the posttest score of the experimental class which is better than the control class. The result of the t test analysis also shows a significant difference in the second class posttest data. The application of bioedutaiment strategy using uno cardsalso influences the students' cognitive learning outcomes because of the pleasant atmosphere, media and learning environment that encourgaes the students' interest during teaching and learning activities. The result of the average posttest of the experimental and control classes indicate that the differences between those classes are not too high. This is because both classes apply the discussion method in the learning process.

Bioedutainment strategy usinguno cardsmotivatethe students to be actively involved in the learning process. In the experimental class, the students should actively take parts in the invertebrate learning process by answering questions about invertebrate material, playing uno card games, discussing, completing students' discussion sheets and presenting the results of the discussion. Students in the control class are less active in the discussion in the learning process. In the control class, students only receive and write down the delivery of material from the teacher.

Tabel 2 Learning observation sheet

Aspect being observed	Control class	Criteria	Experimental class	Criteria
Answering questions	7%	Bad	23%	Less good
Collaborating in group	32%	Less good	63%	Good
Punctuation during the game	-	-	44%	Enough
Sportivity in playing game	-	-	67%	Good

Aspect being observed	Control class	Criteria	Experimental class	Criteria
Uno cards game	-	-	60%	Good
Presentasi menjelaskan hasil Activity	15%	Bad	18%	Bad
Concluding the lesson	7%	Bad	8%	Bad

In table 16, 63% of experimental class students were actively collaborating in the group discussion while there were only 32% of the students in the control class. The result of this study is in accordance with the research about the use of UNO cards in learning conducted by Witantyo and Rahmawati (2017) stating that games for accounting subjectmay involve the students as players so that each student has responsibility to collaborate in the game and experience the same learning process.

The activeness aspect in asking questions in table 16 experimental class shows better score than in control class. In the experimental class,there are 23% students who were active in answering the questions while there are only 16% students in control class. Control class students tend to ask more because they are not really aware of the material, but when the teacher asked, there were only few students who were able to answer the questions. Experimental class students answered more often than what were being asked as the students had better comprehension on the material than the control class did. This proves that biodutainment strategy using uno cards makes the experimental class students could more easily understand the material. This is in line with the statement of Utami et al. (2015) stating that asking questions plays a very important role in the success of the learning process because the questions will encourage students to think.

The results of the analysis on the students' responsesabout bioedutainment learning shows 86% of experimental class students stated that they were more motivated during learning. Bioedutaiment learning using uno cards also provides opportunities and chance for the students to build concepts and develop their ideas in the form of group work to compile the cards. This uno card has several advantages such ascontaining the images of invertebrateswhichimproves the students' motivation so that they are interested in participating in the activities during the learning. This was also reinforced by the teacher's response stating that the application of the bioedutainment strategy using uno cardsenabled students to build their interest in invertebrate material and facilitate the students' understanding because students were actively involved. This is consistent with Sari's (2006) statement that the availability of learning resources and the right learning method can motivate the students to participate in learning so that it influences learning activities and students' learning outcomes can be well achieved.

CONCLUSSION

Based on the results of the analysis and discussion that has been carried out, it can be concluded that learning invertebrate material with the application of bioedutainment strategyusinguno cards has a positive effect on students' learning outcomes.

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