**EFFECTIVENESS OF QUESTION STUDENT HAVE STRATEGIES AND MACROMEDIA FLASH ECOSYSTEM ON STUDENT LEARNING OUTCOME**

**Lady Rahmawati, Rama Cahyati, Aminatun Wakhidah, M. Sukandi Hamzah,**

**Wahyu Oktamarsetyani**

**ABSTRACT**

This research aims to examine the effect of using QSH strategy, flash, and a combination of both and which is more optimal treatment used in the ekosistem. This research was Pre-Experiment Design, using pretest-posttest group design. The population in this research was all students X SMA PGRI 2 Kayen, while samples in this study was class X-1 as first class experimental, class 2 X5 as second class experimental, and X7 as third class experimental. Samples was taken using purposiv sampling. The results showed 60% of students experimental class 1, 82% students experiment 2, 100% of students pass KKM (72). N-gain result of third class experiment reached medium criteria, and affective learning outcomes reach high category. Hypothesis results obtained value of F 7.67> 3.11 continued with LSD test showed that treatment of experimental class 3 was the most optimal in the learning ecosystem than the other two classes.

**Keywords**: *Question Student Have, Macromedia Flash, Students Learning Achievement, Ecosystem*

INTRODUCTION

Learning is a process by which a person undertakes to obtain a whole new behavioral change, as a result of his own experience in interaction with his environment (Slameto, 2010). Based on the prerequisites required for learning, each student strive to be active, learning activity referred to by experiencing, practicing, so that emotional and their skill and learning activity is increasing (Riswani & Widayati, 2012).

Efforts to improve the quality of education is now being developed by involving the participation of student to be active in the learning process. Learning will be more meaningful when the student participating in learning activity directly with the teacher as mentor and facilitator, so learning process is not monotonous. The teacher's role is to generate the student interest and bring student to participate in learning and teaching activities and ask question for everything that is not yet understood in the learning process. One of the characteristics that student participate actively in a learning is to ask question. Active student during the learning process is one indicator of the desire or motivation of students to learn.

Based on observation in 2015 in SMA PGRI 2 Kayen learning process is conventional. During learning process student getting material from the teacher by extracurricular lecture. Submission of learning material is done by giving the theory through Power Point (PPT), so that learning in the class takes place theoretically. In a class of 39 students, less than 25% of student participate actively in learning activities by asking question about unfamiliar material. Based on the questionnaire dissemination, the student participation in

questioning is caused by several things, such as being embarrassed to ask question, being lazy to ask question, not interested in the material, and being afraid of the inappropriate question. Based on the result of learning on ecosystem material of 39 student, 25% of students got score above KKM (≥ 72), 62% of student got average score of KKM (≥ 72), and 12% student got score below KKM (≥ 72).

Ecosystem material is one of the biological material that require student to play an active role in the learning process by exploring nature to understand the concept of ecosystem that exist in the environment directly. Ecosystem learning should involve student directly observe the ecosystem in the surrounding environment, because of the limitation of space and time this learning only take place theoretically without involving the experience of students directly. The application of flash is used to complement the lack of space and time of ecosystem learning by way of analogizing processes that occur in ecosystem where the process can’t be directly observed by student.

Based on these problems, teacher should be able to select and apply learning model and strategies that are able to attract student 'attention, stimulate active participation of student and improve student ability to understand lesson. Question Student Have (QSH) is an active learning strategy that use a technique to involve the student participation through writing. This strategy will be more effective when combined with the discussion method. QSH is expected to solve the learning problem with student participate to ask question, because basically this strategy used to learn about the wishes and expectation of student as a basis to maximize their potential.

Yusuf et al. (2012) on the biology learning that students' learning outcomes increased in the first test of 11.89% in the second test of learning results increased by 2.49% so that the total increase in student learning outcomes reached 14.38% with the completeness rate reached 83.78% . This increase in learning outcomes is caused by QSH students' questions generating understanding and understanding or eliciting reactions or answers that can be understood and accepted by reason. With strategies that directly involve students in this learning process makes students feel motivated to learn and experience meaningful learning.

Nursofi & Budiyono (2011) study on weathering and corrosion material, said that the students' learning outcomes experienced an increase of 28.75% when students were given treatment using flash. The use of flash helps students visualize the material in an abstract ecosystem.

This study aims to determine how the influence of the use of QSH learning strategies, interactive media ecosystems, and combinations of student learning outcomes on ecosystem materials and the three treatments are more effective to use.

METHOD

This research was conducted pre-experimentally with pretest-posttest group design in three classes. The independent variables in this study is the students' response to the treatment that is learning with Question Student Have, Macromedia Flash, and a combination of both. The dependent variable is the result of student learning. The population in this study is all the students of class X second semester of academic year 2014/2015 in SMA PGRI 2 Kayen. Sampling in this study was conducted using purposive sampling technique of class selection based on the number of students evenly obtained by X-7 class with treatments in the form of QSH and PPT media as experimental class 1, X-5 class with Flash treatment and conventional strategy as experiment class 2, and X-1 classes with a combination of QSH and Flash as experiment class 3.

The implementation of this research consists of preparation, implementation, analysis and final phase. This study was designed in 3 meetings. Data collection techniques used are test methods, observations and questionnaires. The test method is used to get the students' cognitive learning outcomes after learning. Observation methods are used to assess student activity. Questionnaire method for obtaining student and teacher response data. The data were analyzed by quantitative method in the form of score. While the influence of independent variable to the dependent variable is analyzed using t-test.

RESULTS AND DISCUSSION

1. Student Learning Results

The students' cognitive learning outcomes are indicated by the final values ​​(NA), classical completeness, and n-gain. Based on the analysis, the final value data indicates that the combination class has the highest average end value compared to the three experimental classes. This can be seen in Table 1.

Table 1. Results of Student Endpoints

|  |  |  |  |
| --- | --- | --- | --- |
| Class | Average grade of mean Discussion value | Average *Posttest Value* | Final Score |
| QSH | 78,1 | 70,3 | 74,2 |
| Flash | 74,6 | 75,7 | 75,1 |
| Combination | 85,6 | 75,9 | 80,1 |

The average score of combined learning outcomes was higher compared to the other two experimental classes (Table 1). Furthermore, to know the difference of the average of student learning outcomes of three experimental classes used anova and BNT test which showed that the result of decision test f arithmetic> f table (7.67> 3.11) and t arithmetic.t table so that Ha accepted and Ho rejected , meaning that there are significant differences between the learning outcomes in the three experimental classes and the three experimental classes have the highest average of the others. Hypothesis testing is supported with classical completeness and n-gain.

The QSH class uses PowerPoint media containing lessons and pictures to make the material presented clear and understandable for the students. Supporting Elements such as animation, video, chart, and music can also be inserted to the PowerPoint Slide (Taradipa, et al., 2013). The slides that had been presented in class already uses charts and picture have not accompanied by videos and animations yet. The lesson about Ecosystem Component is the initial material that is delivered in the learning process, and in this material the students are required to understand various kinds of abiotic and biotic components of the ecosystem. The slide shows the material connected to the student discussion sheet, the definition of ecosystem component itself is not written in the slide but; instead, it displays the pictures of the ecosystem component. Students are expected to discuss among themselves in order to understand the definition of ecosystem component based on the pictures that had been shown through the slide.

The result of the analysis proves out of three experimental classes, the combination class has the highest grade of classical completeness that is 100% of KKM complete students, and the other two classes are the QSH class that is 60% and the flash class that is 82%. The result of classical completeness showed that the class of QSH has not completed the classical completeness because the percentage of classical mastery has not reached the target. The results obtained by QSH class are not accord with the research conducted by Khasanah et al. (2013) According to research about the use of QSH strategy and PPT media on learning about plant tissue, it is stated that this strategy is used effectively in the learning process with classical achievement value reached 90.9%. Supported by the research of Yusuf et al (2012) stated with the using of the QSH strategy, the learning outcomes and student activities has increased about two cycles – fair category to very good category. Several factors that cause the QSH class did not reach the expected classical completeness. QSH questions made by students are expected to improve students' understanding through answers sought by the students themselves, but during the learning process some students would only copy the questions in the book and only some groups of students actively provide the answers so students lack personal experience in making a question.

The flash class has a classical mastery of 82%. The using of flash that contains motion pictures and animation has increased the number of students who pay attention to the lessons, but the number of students who pay attention was not followed by the number of students who takes note about the material. This caused some students did not get the maximum grade because the material only goes into the short-term memory of the students. Unlike PPT, there’s motion picture elements in flash. This motion picture showed the lessons systematically, where the processes of biogeochemical were displayed sequentially, so the students could get a real picture about the processes in the biogeochemical cycle (Smaldino et al., 2004).

Biogeochemistry cycle is the part of difficult material to be study in biology. In this part you will find several cyclus of biogeochemistry like water cycle, carbon cycle ect, so that the students need interactive media to gain their motivation to study this part. This Flash, have a moving animation that can clarify the processes. For example on food chain, there is moving animation like mouse (first consumen) eating grass (produsen) and then prey by snake (second consumen), and the snake was prey by hawk (third consumen) on the field background. When this motion picture finished, there is a question on the dekstop. This question stimulate students to make a similar question based on the materi. The combination class have highest passing grade among the others and successfull pass the passing grade. It is because used of interactive media made the student interested in learning and then the student give their question and ask the question their self. This exelent passing grade was support by n-gain value from the other three classes. With flash, nitrogen cycle present start with N2 changes into NO3- by *Nitrosomonas*, *Nitrosococcus*, dan *Nitrobacter.* And then, simbiotic of *Leguminocae* and *Rhizobium* and the whole nitrogen cycle. When the motion picture finished, there is a question on the screen. What happend when nitrogen microorganism doesn’t present? This question, stimulate students to think logically. Because student cannot find the answer from the textbook directly. The students should read and understand the process and have a discussion to know the answer.

When the time to make a question (QSH) has come, the student have to make a question on the paper, so that students should read the textbook again. The previous question lead the student to make a similar question and match with the topic. The objective of this flash is to develope the quality of students’s question through the motion picture. And the *QSH* is the facilitator for the student to write their question. To solve the question they have, students need to read the textbooks again and again. From the comparison of the classes gain, the combination class have a highest score of three classes. Using interesting media and strategy cause the combination class gain highest score on the test. Support by Nurhayati *et al*. (2009), on her research tell that *QSH* is effective on the learning process when this strategy was combine with match learning media.

Tabel 2. N-gain result of three classes

|  |  |  |  |
| --- | --- | --- | --- |
| Class | *N-gain* average | Category  | Persentase |
| *QSH* | 0,53 | medium | 66% |
| *Flash* | 0,52 | medium | 64% |
| Kombinasi | 0,56 | medium | 76% |

The combination class has 76% of *n-gain* value. One example of the material presented using *motion picture* in an interactive medium is nitrogen cycle, this process has a difficult cyclical sequence to interpret because it can’t be seen clearly nature. The calss of *flash* has 64% of *n-gain* value not much different from the QSH class with 66% of *n-gain* value.The acquisition of n-gain is supported by the research by Suwarsono (2014), *QSH* strategy can increase the average of pretest-posttest score of students compared with conventional learning, n-gain achieved in this study is in the medium category of 0.63. The percentage of acquired *n-gain* has reached the indicator set so that although the *QSH* class has not finished its classical completeness but seen from n-gain value reaching medium category *QSH* strategy with PPT media have positive effect on learning. The acquisition of classical and *n-gain* is supported by hypothesis test analysis using variance analysis. Before test using Anava, students' posttest data were first tested for normality and homogeneity. Normality and homogeneity test results showed that the three experimental classes had normal and homogeneous distributed data. Then the variance analysis was performed as a hypothesis test with the result that there was a significant difference of learning outcomes from the three experimental classes based on the treatments given to each class followed by further testing using BNT, the mean comparison of the three classes stated that the optimal combination class was used in learning with the highest average of the other two classes. The treatment used in the *QSH* class is not more optimal than the treatment used in the flash class and vice versa seen from the average acquisition that is not much different. Based on the hypothesis test, classical completeness, and *n-gain* of the three experimental classes gave a positive effect on the students' learning outcomes and the most effective combination classes were used seen from the BNT test the combination classes had the highest average, the *n-gain* reached the medium criterion, and the classical completeness 100%.

# Students’ Affective Learning Outcomes

The students' affective learning outcomes are presented in Table 3.

Table 3. Students’ affective learning outcomes

|  |  |  |
| --- | --- | --- |
| Internal Score | Criteria | Experimental Class |
| I | II | III |
| Amount | % | Amount | % | Amount | % |
| 80% <%s≤100% | A | 3 | 10 | 5 | 20 | 6 | 20 |
| 60% <%s≤ 80% | B | 17 | 56 | 16 | 64 | 24 | 80 |
| 40% <%s≤ 60% | C | 6 | 20 | 4 | 16 | 0 | 0 |
| 0% <%s≤ 40% | D | 4 | 14 | 0 | 0 | 0 | 0 |
| The number of students | - | 30 | 100 | 25 | 100 | 30 | 100 |

The result by calculation of the student character of the combination class is the highest compared to the other two experimental classes (Table 3). Differences in attitudinal values in the three experimental classes were caused by differences in learning atmosphere in the three classes. The combination class doing the learning activity by using *QSH strtategy* with *flash* media. *QSH* is used to improve student’s understanding and activeness through questioning activities, student activeness is expected to increase by seeking answers from questions posed by classmates. Of the three experimental classes, 14% of the students get less criteria caused by less communicative students in learning and less active in paying attention to the material presented.

CONCLUSION

Based on the results of data analysis and discussion of research results, it can be concluded that the use of QSH strategies, interactive media ecosystems, and combinations provide a positive effect on student learning outcomes. The QSH strategy combined with *flash* is the most effective to be used in learning process.