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USING AN AUTHENTIC ASSESSMENT AND EFFECT TO STUDENT METACOGNITIVE IN BIOLOGY

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Abstract

Authentic assessment is one alternative that is used to evaluate students' learning outcomes believed to explore students' ability. The implementation of it has been applied at the senior high school level (SMA) since the KTSP began. However, the teachers still find difficulties to use it in the teaching-learning process. Some factors like times, the appropriateness of authentic assessment in supporting the learning activities, and determining the essential components needed to accommodate and to explore the students' capabilities particularly in the biology class on biodiversity topic. This current research aims at knowing the effect of using authentic assessment to the students' metacognitive skills in biology class at SMA. The design of this research was a quasi-experimental with nonequivalent pretest-posttest control group design in factorial 2X1. The Experimental group was treated using authentic assessment however the control group was not treated using authentic assessment. The results showed that there was not significant effect of using authentic assessment for metacognitive skills in biology class at SMA. This result might be caused by the uncommunicative questionnaire, the time is too short for implementing authentic assessment, the teachers and the students were not accustomed to design and to use authentic assessment in the learning process.

Keywords: *authentic assessment, metacognitive skills*

A. Introduction

The development of education is shifted from teacher center paradigm to the student center, that aims to make the students active in the learning activities. In the whole learning activities through student center, the teachers act as the facilitator. The important thing that may not be forgotten is how to evaluate the learning process and result that was done and accomplished by the students. One alternative to do the evaluation of the student learning result and are believed to be able to explore students' awareness is to use the authentic assessment.

It was expressed by Hart (1994) in Corebima (2011) that an assessment is considered as authentic if it can involve the learning participants to the useful, important, and meaningful tasks. With the right form of authentic assessment, students will be able to do the authentic tasks, i.e. the tasks that demand the students to integrate the knowledge and awareness that has become one with their condition and may also be found in the daily life of the students.

The authentic assessment measuring target is the competence measurement that directly done and given into the real situation. The authentic assessment is the assessment form by giving opportunities to the students to show the tasks related to the daily life (real-world task) through some various meaningful application from their knowledge and skills (authentic assessment tool homepage). In the authentic assessment, the assessment is often based on the students' performance, where the students are asked to demonstrate their knowledge and skills, or awareness in any kind of appropriate situations they faced (Widhiarso, 2004). The other effects by applying authentic assessment according to Hammond and Snyder (2000) are that students will have their self-confidence of their work because they found some new facts to support it, and also have some reciprocal effects in learning so the teacher become more familiar to the learning condition that has been conducted.

The implementation of the learning evaluation by assessing the learning process with authentic assessment instruments has begun to be applied in the senior high school since the enactment of *kurikulum tingkat satuan pendidikan* (KTSP). However, in fact the teachers are often have difficulties in applying the authentic assessment in the learning. The limiting factor proved to cause trouble are the time factor, the authentic assessment form, and the important component of authentic assessment that can accommodate and explore the students' awareness. It is important to the teacher to pay attention, that despite the cognitive factor is the most noted, but it is more principal to make the students have the high thinking awareness and also to teach how to make that high thinking awareness. This awareness is metacognitive awareness, i.e. the awareness to recognize and realize the possessed learning process and progress. Thus, students will aware their thinking process and it will indirectly make them become independent learner.

The learning process will essentially generate 3 teaching thinking; teaching of thinking, teaching for thinking, and teaching about thinking. In teaching of thinking, the learning process is directed to the specific mental skills formation, such as critical skills, creative thinking, and metacognitive skills. In teaching for thinking, the learning process is directed to the efforts to create a learning environment empowering cognitive development, such as creating an atmosphere of democratic openness, creating a climate of fun learning so the students can optimally developed. For teaching about thinking, the learning process is directed to the efforts to help students to become more aware about their thinking process. The stage to help the students develop their metacognitive awareness is not something that easily done by teachers. Until now, in applying the learning of biology, teachers still insist on increasing the cognitive awareness by using Bloom taxonomy orientations from the C1-C6 awareness and still not teach about the thinking itself yet. This condition makes many students rely on the subject given by the teacher and they become less understand the advantages and disadvantages in their learning.

Along with the cognitive psychologic development, then also developed the way teacher evaluate the learning result achievement, especially for the cognitive domain. Currently, in evaluating, the teachers tend to emphasize only the cognitive purposes without observing the cognitive process dimension, especially the metacognitive awareness. As a result, the efforts to introduce the metacognition in solving biological problems to the students have not been much explored. The metacognitive awareness is the interaction between metacognitive knowledge and metacognitive skills. The metacognitive knowledge can be seen when the students aware with their own cognitive awareness and do the monitoring of the cognitives they have in the learning process (Anderson *et al.*, 2001). The metacognitive skills will help the students to become self-regulated learners who are responsible for their learning progress and adapt their learning strategy to achieve the purpose (Corebima, 2006). For example the students know that they have memory for the subject matter of biology. To assess their achievement, students make some notes about their achievements, and based on that achievement notes or monitoring they can do a self-reflection on their flaws and merits. With the controlling and monitoring that cognitive process, it will be easy to evaluate their cognitive achievements. Thus, the use of authentic assessment in learning biology will make the students aware the learning process so they can improve their learning result. Therefore, it is important to know how authentic assessment can affect the metacognitive awareness of the students.

The purpose of the research is to determine the influence of the use of Authentic Assessment to the Metacognitive Awareness in the Subject Matter of Biology of Senior High School Students.

B. Methods

The research is conducted with quasi experiment to know the influence of the use of authentic assessment to the metacognitive awareness of senior high school students in the subject matter of biology. The authentic awareness treatment is given as the independent variable to determine the dependent variable, i.e. the metacognitive awareness. The research design used is the nonequivalent Pretest-Post Test Control Group Design with factorial 2x1. The research is conducted at SMAN 1 Madiun, with the population of 8 classes and samples of two classes, i.e. XF and XH taken randomly. The metacognitive awareness data is captured by Metacognitive Awareness Inventory (MAI) instrument with three options of answers; the answer *yes* got 3 points, the answer *undecided* got 2 points, and the answer *no* got 1 point. The data analysis used is Anacova with 5% significance level.

If the analysis result shows the value of F count significant then it will continued to a different test of Least Significance Difference (LSD). The whole analysis is helped with SPSS 16 for windows program, that begin with the covariant test, the homogeneity test, and the data normality.

C. Discussion

Anakova test results show that there is no influence of the authentic assessment implication to the students' metacognitive awareness (score $p > 0,05$ i.e. 0,315). It indicates that the class using authentic assessment and the class that are not using authentic assessment give the same influence towards the students' metacognitive awareness. The research results was reinforced with the average score of the students' metacognitive awareness that are not a far cry between the class treated with authentic assessment and the class that are not treated. The average score without assessment is 85,59, whereas the authentic assessment is 88,08). Some factors that estimated to affect the research result are the research instrument, the model of authentic assessment using, the teachers, the students' internal factors, and the authentic assessment implication that is too short.

The instruments to measure the metacognitive awareness is using the Metacognitive Awareness Inventory (MAI) scoring guidelines, which each choice that answered *yes* got 3 points, *undecided* got 2 points, and *no* got 1 point. Next, the obtained points from each category are being added based on the number of questions items i.e. 52 items. From the insignificant results it seems that MAI instrument is less appropriate with the culture of the senior high school students in Madiun. It is seen from the way the students answer and fill the instrument which tend to not mean it. Without reading the meaning of the sentences asked in the questionnaire carefully, the students straightly make some marks in the 'yes' column that impressed so hurried. Beside seen from the way the students answer, it can also seen from the suitability the students do with the given answer. In addition, some of the things that causes MAI less appropriate for students particularly in Madiun are the instrument characters that are not much enough, the instrument language that are not communicative enough, and the instrument answers that give students no opportunities to give some explanations. These results are confirmed by the research of Murni (2008) that explained that MAI questionnaire is not suitable for the condition of students in Indonesia generally.

The model of using authentic assessment type in experiment class is estimated to cause the authentic assessment has no effect on the metacognitive consciousness. This is because the authentic assessment used as practical activity report about biodiversity does not emphasize the students to review and reevaluate the results of their works. The application of such authentic assessment makes the students do not realize what is needed to complete the lack of material that has not been mastered yet. Whereas, the reviewing and reevaluating process is urgently needed in increasing the metacognitive awareness according to Hanten *et al.* (2004), that the consciousness to observe, evaluate, and use the control awareness are the mental processes belong to a person as a unique character of human as the metacognitive consciousness.

Although the use of authentic assessment emphasize on the students' active learning activities, in the preparing, the writing, and the reporting it still need the teacher guidance. The under optimum of the students' activity monitoring process makes the use of authentic assessment still only on the obligation stage for the students. This is appropriate with Sideridis *et al.* (2006) has expressed that the metacognition can be done with the strategy that applied to students by knowing the way of certain moments such as: a) training, by repeating the readings or looking back on the specific parts of the reading texts, b) planning, c) monitoring, and d) controlling themselves. The supports from teachers and the planned monitoring will optimize the use of authentic assessment and also as feedback for the learning process which is already done.

The other factors that cause the authentic assessment has no effects to the students' metacognitive consciousness are the psychological factors in the students themselves. Researcher expect that students are tend to less concentrate while filling the MAI, that most students fill the answers with no based on their metacognitive consciousness yet. The students assume that filling MAI is only as an obligation that should be done and not as a form of evaluation of the metacognitive awareness that will be able to help the development of their learning. This results that the answer given is not appropriate to the conditions and circumstances of the students themselves truly are. In fact, if the students get an understanding about their metacognitive consciousness and understanding it will really help them to develop their cognitive potentials. These conditions are also appropriate with

the opinion of Murni (2008), that letting the students learn with metacognitive strategies can encourage them to be independent, it can foster the honest attitudes, and they can be bold to admit mistakes that ultimately will lead the students into the obvious increasing of the learning results.

The next factor that causes the authentic assessment has no effects to the metacognitive consciousness are the time of authentic assessment implications that is too short, i.e. a KD of biodiversity with the face to face allocation of 3 times. The teachers' initial planning has already delivered the kind of authentic assessment as the temporary practical reports, and the learning summary as the plain learning journals for students. In doing so, the compiling of journals is delivered by less than 50% of students, and even the others are not even compile it. It is impressed that the students do not consider the learning journals as some significant parts to support the learning process. In addition, a learning journal does not the instrument that they usually use in their learning activities. Observing these conditions, the adjustments and habits for teachers and students to use the authentic assessment does seems requiring times and conditioning continuously. The teacher will accustomed to get feedback of learning process and the students will have the metacognitive awareness that help to raise their learning results

D. Conclusions

The results showed that there is no effects between the use of Authentic Assessment to the Metacognitive Awareness in the Subject Matter of Biology of Senior High School Students. Some of the things causing it are the less communicative questionnaire, the students' psychological conditions, the time of authentic assessment implication that is too short, and the teachers and students who are not used to organize and use the authentic assessment in learning. Therefore, the use of the authentic assessment as a tool of developing the students' metacognitive awareness requires planning, monitoring, and conditioning continuously. Basically, the use of the authentic assessment needs to be always used as an instrument to help students evaluate themselves, to support assessment, and to feedback the learning process for teachers.

Suggestions

Any further researches about the form of the Metacognitive Awareness Inventory (MAI) appropriate with the learning, character, and psychologic conditions of the students in Indonesia are still needed. Researches concerning the use, the shape, and the selection of the right type of authentic assessment to support the learning also still needs to be done.

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