CE-3

THE USE OF HYBRID MULTIMODAL LEARNING ON CHEMISTRY AT SENIOR HIGH SCHOOL TO IMPROVE STUDENTS' MOTIVATION

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Abstract

Integration of delivery systems of learning such as model, method and media in teaching-learning in this research was called multimodal learning. This research investigated the effect of multimodal learning to students' motivation.

Multimodal learning in this research was cooperative learning delivered through hybrid, a combination between face-to-face and online using learning management system (LMS) Edmodo, and completed by some multimedia. Samples of this research were students of Grade XI-Science of SMAN 1 Purworejo in the academic year of 2013/2014. The samples were from two groups, experiment and control. Data of students' motivation from both groups were collected using a questionnaire and analyzed using independent sample t-test to study the difference of students' motivation between the groups, and using paired t-test to investigate the improvement of students' motivation in each group.

The results showed the improvement of students' motivation from experiment group was higher significantly than that from control one (sig/ p = 0,000). The motivation of student from experiment group improved significantly due to multimodal learning (sif/p = 0,000), but that from control group did not improved significantly (0,054).

Key words : multimodal, motivation, media

INTRODUCTION

Using the combination of modal and media in the right composition is one of solution for teacher in teaching-learning process, especially for difficult subject, such chemistry (Charles Fadel, 2008: 14). Chemistry matter consists of facts, concepts, rules, laws, principles, theories, and questions (C. Middlecamp and E. Kean, 1985: 9). It pushes teacher to be more creative in setting the teaching-learning, so the class will be more interesting and meaningful. It is caused each modal and media have their own strengths and limitations.

Integration of varience teaching strategies is known as multimodal learning (Dominic W. Massaro, 2012: 1). In the implementation of multimodal learning, teacher do not only focus on a learning media or modal but also use any media that help them and suit for the learning matter. Even, teacher also can use any academic online community such Edmodo.

Everyone can not be separated from technology in this era. Online community is the favorite one. The student's dependence of technology can help teacher to set the teaching–learning by using academic online community such Edmodo. Edmodo is an online platform that mix social media with electronic class management.

Multimodal learning in this research was cooperative learning delivered through hybrid, a combination between face-to-face and online using learning management system (LMS) edmodo, and completed by some multimedia. The setting of multimodal learning can improve student motivation because the strategy is suited with the matter. Student will be more interesedt

when learning condition does not only focus on a strategy. The increase of the interest will improve student motivation.

This research studied the improvement of students' motivation from the group that implement hybrid multimodal learning compared to that from the group that does not implement hybrid multimodal learning and improvement of students' motivation in each group before and after treatment. The advantage of this research to inform hybrid multimodal learning design in chemistry and to introduce teacher for long distance learning that can be one of learning alternatives.

RESEARCH METHOD
A. The Research Design
This research is an experiment research that studied the influence of hybrid multimodal learning on chemistry to students' motivation.
B. The Research Variable
There are three variables in this research. They are independent variable, hybrid multimodal learning on chemistry and dependent variable, the learning motivation in chemistry teaching-learning.
C. Population And Sample
The population of research is grade eleventh of science class student of SMAN 1 Purworejo in 2013/2014 academic year. Samples were chosen by purposive sampling.
D. Instrumentation and Data Collection
The instrument that used in this research are lesson plan, questionnaire, and interview sheets. The lesson plan was written for two groups seperately, experiment group with lesson plan that was designed to implement hybrid multimodal learning and control group whose students studied without hybrid multimodal learning. Questionnaire is the instrument to measure the improvement of students' motivation. The questionnaire is given before and after treatment. Interview sheets is another instrument to measure the improvement of students' motivation. The interview is used to get the data of motivation in more detail. All of instrument were measured for validity.
E. Data analysis
Data were analyzed by SPSS 16.0 to investigate the effect of hybrid multimodal learning on students' motivation. Before the analysis was done, the normality and homogenity of data were measured. The hypothesis test consist of two test. They are paired sample t test to analyze the improvement of students' motivation in each groups and independent sample t test to analyze the improvement of students' motivation between the groups.

RESULT AND DISCUSSION
A. Result of Data Analysis
Before the hyphotesis of this research was tested, the data in this research should be normal and homogenous. The normality test was done by SPPS 16.0. All data showed the significancy more than $0,05$. It means that all of data were in normal distribution. The homogenity test was done for prior motivation with significancy more than $0,05$. It means that the population is homogenous.

Based on independent samples t test, the p value of experiment result is $0,000$, less than $0,005$. It means that there is significant difference of students' motivation from each group, experiment and control. Paired samples t test showed the improvement of students' motivation in each group. The test showed that there was significant improvement of students' motivation in experiment class, the p value of experiment results is $0,000$. But, that for control class did not improve with the p value was $0,054$, more than $0,05$.

B.   Design of Learning

Teaching-learning of experiment group was done for six meeting. Before treatment, students was given the questionnaire of motivation. Teaching-learning was always done in group because the learning model which is cooperative learning of group investigation type. Each group should be heterogeneous. Investigation group was proposed to create the student that can well working in group, discussion, sharing, and help each other when solving problems.

Trianto (2009: 80), cooperative learning of group investigation type is consisted of six steps. They are topic selection, procedure explanation, investigation, analytical synthesis, presentation, and evaluation. Teaching-learning in experiment group was done for that six steps but there are some modification, i.e. combination between face to face and online by Edmodo and the startegy when group presentation their investigation result, and evaluation (Fig. 1)
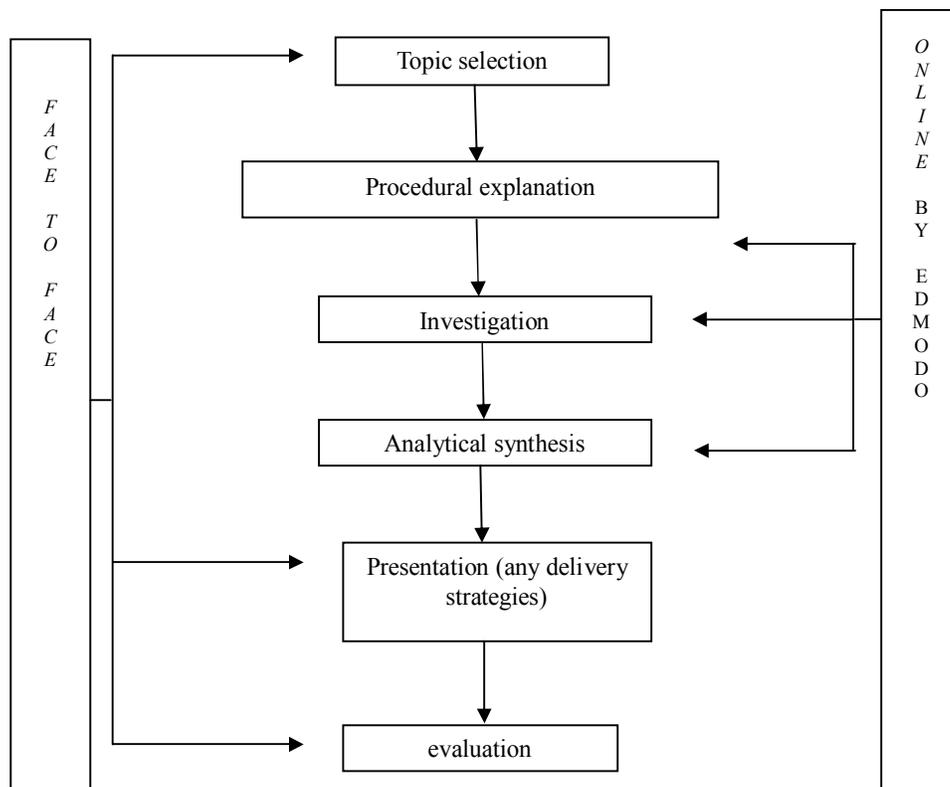
Fig. 1, The teaching-learning steps in experiment group

In the topic selection, teacher chose a topic and gave it to each groups. The topic was informed a week before teaching-learning. Each group was given different topic. Next, first group will receive the instructions from teacher, related to the topic and media needed for the investigation. This process was done in Edmodo. After getting the instruction, the group can start their investigation, analysis, and synthesis of related topic (Fig. 2)
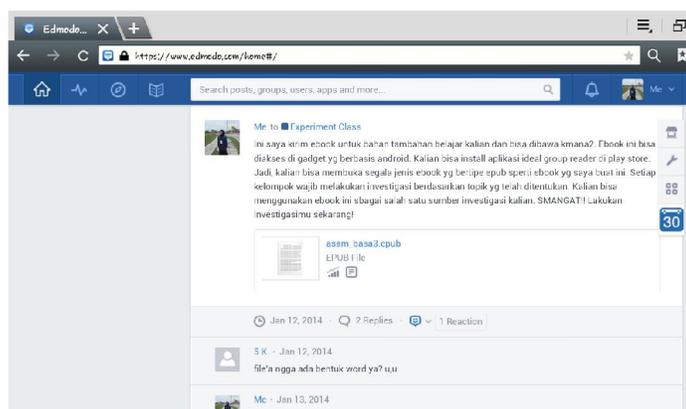
Fig. 2. Posting through edmodo in hybrid learning of experiment group

Teaching-learning which combine face to face and online learning, with various strategies of presentations in this research is one of application of hybrid multimodal learning. In online learning, the group also can ask any problems related to the topic. Next steps, presentation of group investigation results and evaluation was done in the class by face to face learning. They presented their investigation with different strategies, such as demonstration, experimentation, or presentation. In this step, questions and discussions among the groups was opened. Teacher facilitated the discussion and highlighted the concepts during the discussion. Then, the last step was evaluation in which all students concluded overall teaching-learning results. In the last step of face to face, teacher informed the topic for next discussion. Teacher also gave any quiz through Edmodo and the best answer was given points that will accumulated in last meeting (Fig. 3). The best group with the highest points was given rewards.
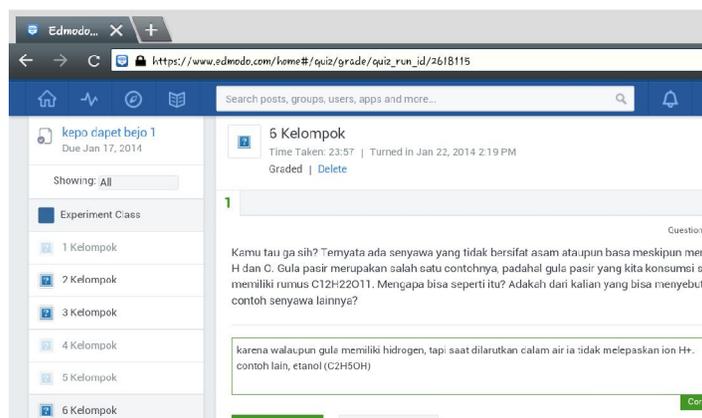

Fig. 3. The answer of students through Edmodo

The questionnaire of motivation was given to student in experiment and control group in the last meeting. Based on the questionnaire result, hybrid multimodal learning can bring democratic learning. It was shown by the fact that teacher called students as responsible person, mature person with well decision, and good person in solving problems. Based on Nana Sudjana

(2002: 42), democratic learning improved learning motivation and increased learning achievement compared with inflexible teaching-learning. It was also showed by the questionnaire of motivation result, the total score of prior motivation is 3298 and the final motivation score is 3445 for experiment group. It means that there was big improvement of motivation of experiment group. The analytical data also showed for the same result.

C. Learning Media

Not only investigated delivery startegies, this research alsostudied the use of learning media. They were Ebook and Lectora. The media were used to help student to investigate as one of alternative learning sources. Ebook is created with *Sigl (.lnk)* program. Ebook can be played by using *Reader Program* such *Ideal Group Reader* (Fig. 4). So, student can access anytime by using their smart phone that supported with that *epub Reader*.
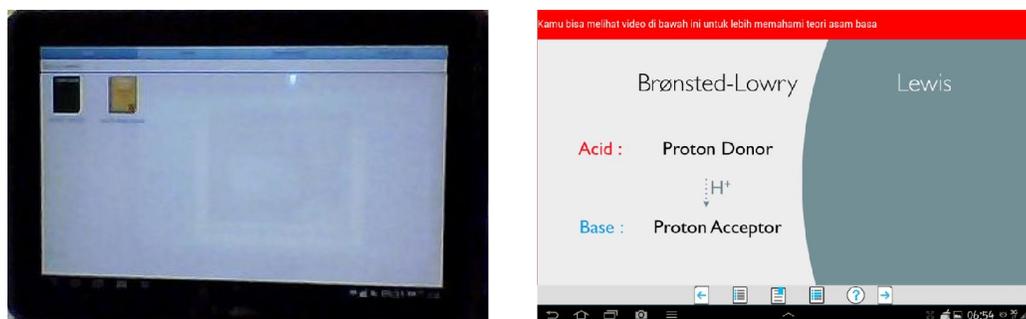

Fig. 4. Screen shot of *Ideal Group Reader* and *Ebook* in the Android tablet

Lectora was one application used to develop media in this research by which students presented their investigation results (Fig. 5.)

Fig. 5. Lectora appearance

Both media had been validated by chemistry teachers that reviewed for the content of media and by students from chemistry education of UNY that reviewed for the layout of media.

D. The Effect of Hybrid Learning of Students' Motivation

Chemistry learning motivation was measured by using questionnaire. The motivation of

students in each group was analyzed by using paired sample t tests, and showed that there was significant difference of motivation of students from experiment group before and after implementation of hybrid multimodal learning. But in the control group, the motivation of students did not increase. The results of interview also showed similar results. Most of students in experiment group stated that their motivation improved during the teaching-learning by using hybrid multimodal learning. Based on Dodon Yendri research reslut (2010: 6), teaching-learning process that combined between face to face and online teaching-learning was one of teaching-learning alternatives to reach the optimum teaching-learning objective. The independent t test result shows the significant difference of improvement of motivation between groups (Fig. 6).
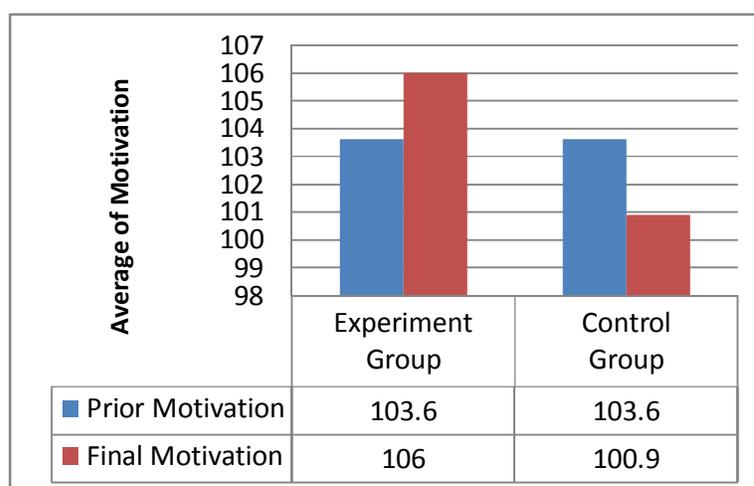

Fig. 6. The mean score of students' motivation from experiment and control groups

Some factors that influence the improvement of students' motivation are
1. The cooperative multimodal learning of group investigation based on web can increase the student interest and the student's curiousity (Lori Kupczynski, et. al. : 2012, 82-90). The curiousity arise after the student is given the investigation topic in Edmodo. Beside that, teacher also give some quizes and if they can solve the problem right and fast, they will get more stars/ points.
2. The cooperative multimodal learning of group investigation based on web give the same chances to make a good investigation. Micheal Sankey, Dawn Birc, and Michael Gardiner research result (2012 : 852-863) said that student involvement in multimodal learning based on web environment give bigger time and chance in understanding the matter than face to face learning.
3. The cooperative multimodal learning of group investigation based on web give the chance to show their presentation and explanation ability in front of class (Micheal Sankey, Dawn Birc, and Michael Gardiner research result, 2012 : 852-863).
4. The cooperative multimodal learning of group investigation based on web create individual or group fair competition. Fair competition will make condusive learning condition (J. Shindler, 2010: 193 – 209). Students seriously study to get the best result, so the motivation improves.

CONCLUSION AND SUGGESTION
A. Conclusion
1. There was significant difference of improvement student's motivation between the group that used hybrid multimodal learning and non hybrid multimodal learning.

2. There was significant difference of student's motivation in group that used hybrid multimodal learning.
3. There was not significant difference of student's motivation between the group that used non hybrid multimodal learning.

B. Suggestion
1. For the next research, teacher should inform students about the time of discussion daily.. Teacher may manage and schedule the time that are effective for online discussion in Edmodo.
2. For the next research, media should be validated empirically to show how effective that media are.
3. For the next research, media should be more various, innovative, and interesting, , so students will be more interested in using them.

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Certificate

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