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Yogyakarta, Indonesia, 6-7 May 2015

Rector,



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MESSAGE FROM THE RECTOR OF YOGYAKARTA STATE UNIVERSITY

Welcome to Yogyakarta, Indonesia!

It is a great honor and pleasure for me to welcome you all to the 3rd International Conference on Educational Research and Innovation held in Yogyakarta, Indonesia. On behalf of Yogyakarta State University and the committee, let me extend my warmest greetings and appreciation to all speakers and participants who have travelled hundreds or even thousands of miles by various transportation means to come to Yogyakarta to attend this conference. It is my strong belief that your safe journey has been due to the blessings granted by God the Almighty and the Most Merciful to Whom we without any further due have to express our gratitude and praise.

It is indeed a privilege for Yogyakarta State University to have the opportunity to organise this very important conference in which educational researchers and practitioners get together to share ideas, experiences, expectations, and research findings. This conference is held as one of the agendas of Yogyakarta State University to celebrate its 51st anniversary. The theme of this year's conference is "Ethics in High-Quality Research" .

Research is one of the activities among the academic members of a university. It is a systematic effort to solve the problems or answer the questions by collecting data, formulating the generalities based on the data, then finding and developing organized knowledge by scientific method. It is expected that from research activities valuable empirical facts can be obtained to improve and develop the theory and practice to bring a better quality of education.

Unfortunately, currently issues on ethics are regaining their popularity in various practices of research, such as inaccurate data analyses, data manipulations, and plagiarism. In response to this, in this year to support the roles of the Institute of Research and Community Services of Yogyakarta State University in encouraging researchers to conduct high-quality researches, an International Conference on Educational Research and Innovation (ICERI) is held under the umbrella theme of Ethics in High-Quality Research. It provides teachers/lecturers, education practitioners, college students, and policy makers the opportunity to share their knowledge, experiences, and research findings which are innovative and relevant to develop the educational practices focusing on the process and product.

This third conference is aimed at discussing the papers on the research findings related to research ethics, and researches on character education, teaching innovations, as well as educational policies. It is expected that this conference will reach its declared objectives successfully as a strategic forum to yield recommendations on the importance of ethics in the research to produce high-quality research for the benefits of the human' s welfare.

To conclude, let me wish you a fruitful discussion during the conference and an enjoyable stay in Yogyakarta. And finally, hopefully all materials in this conference compiled into a proceeding are useful for us to improve the quality of education and educational research.

Thank you very much for your attention.

Wassalamu' alaikum warrahmatullah wabarakatuh.
May peace and God' s blessings be upon you all

Yogyakarta, 6 May 2015

Rector,

Prof. Dr. Rochmat Wahab, M.Pd., M.A.

MESSAGE FROM THE ORGANIZING COMMITTEE

His Excellency Minister of Research and Technology and Higher Education,
Vice Rectors and Deans of all faculties,
Honourable Heads of Institutes of Research of the surrounding universities,
Distinguished all invited speakers and all other speakers,
Distinguished guests,
All participants,
Ladies and gentlemen,

Assalamu' alaikum warrahmatullah wabarakatuh
May peace and God' s blessings be upon you all
Good morning

First of all allow me to extend my warmest greetings and welcome to you all to the 3rd International Conference on Educational Research and Innovation, held by Yogyakarta State to celebrate its 51st anniversary.

Raising the theme – Ethics in High-Quality Research - this conference is designed to discuss the papers on the research findings related to research ethics, and researches on character education, teaching innovations, as well as educational policies. Hopefully, all discussions in this conference can be inspiring and useful for us to improve the quality of education and educational research.

Ladies and gentlemen

For your information, we will proudly present one keynote speech, four plenary presentation sessions and four parallel presentation sessions. Four outstanding speakers in the field of character education and educational research have been invited. They are Christopher Drake from Association for Living Values Education, Hong Kong, Dr. Elizabeth Hartnell-Young from Australian Council of Educational Research, Dr. Mohamed Bahaaeldin from Faculty of Education, Technische Universitat Dresden, Germany, and Dr. Nurul Taufiqurahman, Head of Innovation Center of the Indonesian Institute of Sciences (LIPI), Indonesia.

Ladies and gentlemen

We have done our best to prepare for this conference. So, my highest appreciation and heartfelt thanks to all committee members. As to err is human, shortcomings may

occur here and there. On behalf of the committee, I would therefore like you all to accept our apologies.

At the end of my speech, I would like to kindly request the Rector of Yogyakarta State University to officially open the conference.

To conclude, let me wish you a productive discussion and a fruitful conference. Thank you very much for your attention.

Wassalamu' alaikum warrahmatullah wabarakatuh.
May peace and God' s blessings be upon you all

Yogyakarta, 6 May, 2015
Head of Research Institute and Community
Service of Yogyakarta State University

Prof. Dr. Anik Ghufron, M.Pd.

FOREWORDS FROM THE HEAD OF COMMITTEE

Assalamu 'alaikum wa Rahmatullohi wa Barokatuh
May peace and God' s blessings be upon us all

Your Excellency The President of Yogyakarta State University Prof. Dr. Rochmat Wahab, M.Pd, M.A, ladies and gentlemen, good morning and welcome to Yogyakarta State University.

The seminar entitle International Conference on Educational Research and Innovation (ICERI) is held under the umbrella theme of Ethics in High-Quality Research. The seminar is organized by Institute of Research and Community Services, Yogyakarta State University, working together with ACER, LIPI, and University of Dresden. This seminar also dedicated to celebrate the 51st Commemoration of Yogyakarta state university.

Ladies and gentlemen, on behalf of the committee of this conference, I would like to express highest appreciation and gratitude to the keynote speakers **Prof. Drs. Muhammad Nasir, Akt, M.Si, Ph.D** (Minister of Research, Technology and Higher Education) and four inveted speaker :

- **Christopher Drake**
(Association for Living Values Education, Hong Kong)
- **Dr. Elizabeth Hatnell-Young**
(Australian Council for Educational Research, Australia)
- **Dr. Bahaaeldin Mohamed**
(Faculty of Education, Technische Universitat Dresden, Germany)
- **Dr. Nurul Taufiqu Rahman, M.Eng.**
(Head of Innovation Center, Indonesian Institute Sciences (LIPI), Indonesia)

The conference is around 200 participant with 121 orally presented article from lecture, researcher, teacher, and student from about 45 universities. The conference is aimed at discussing the papers on the research findings related to research ethics, and researches on character education, teaching innovations, as well as educational policies. It is expected that this conference yields recommendations on the importance of ethics in the research to produce high-quality research for the benefits of the human' s welfare.

This conference will be far from succes and we could not accomplish what we do without the support from various parties. So let me extend my deepest gratitude and highest appreciation to all committee members. I would also like to thank each of participants for attending our conference and bringing your expertise to our gathering. Should you find any inconveniences and shortcomings, please accept my sincere apologies. In conclusion, I hope that your discussions produce something useful and very pleasant stay in Yogyakarta.

Wassalamu' alaikum wa Rahmatullohi wa Barokatuh
Thank you

Por. Dr. Sri Atun

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INTEGRATION OF ICT-BASED MULTIMEDIA INTO HYBRID MULTIMODAL LEARNING AT SENIOR HIGH SCHOOL TO IMPROVE STUDENTS' ACHIEVEMENT

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Abstract

Nowadays, Indonesian students use Information and Communication Technology (ICT) massively, including the usage of 2.0 web applications such as Facebook, Twitter, YouTube, and others which allows every user of those applications to interact and to share content each other. E-learning started to attract a lot of attentions from researchers as well as practitioners. Many of existing model of e-learning systems are mainly based on plain client-server or peer-to-peer architectures. In this paper we provide a model of study called multimodal by combining some strategies of learning model through face-to-face and online integrating ICT-based multimedia learning, and by facilitating collaboration among teacher, students, and parents in current times. The ICT-based multimedia used in this research were android mobile application, flash media animation, powerpoint presentation, and prezi online presentation, that were developed by researchers. The purpose of this research is to analyze students' achievement and the improvement of achievement due to the multimodal learning. The samples of this research were grade XI students of SMA N 1 Mlati Sleman, divided into two groups of experiment with 25 students and control containing 25 students. This study showed that multimodal learning affected students' achievement in which students had higher achievements results from multimodal learning.

Keywords: e-Learning Multimodal Learning, ICT- Based Multimedia, Students' Achievement

1. Introduction

The implementation of chemistry learning activity in school should be an active, interactive, fun, and can increased student's learning motivation which purposed to improve quality of student's chemistry learning achievement through actively. [1]. Various forms of learning model can be used to enhance the learning experience into a better direction [2]. The use of a particular teaching model allow teacher to reach specific learning objectives. One of the learning model that can be used in this case is a model of cooperative learning.

Cooperative learning is a strategy in which small groups of students with different levels of ability engage in a variety of activities to improve their understanding of the topic [3]. There are certain types of cooperative learning. One of them is think pair and share type (TPS). It is a collaborative learning strategy in which small

groups of pairing learners with different levels of ability work together to achieve a shared learning goal [4].

Rapid technological developments now provide a variety of alternative media and learning environment that can be used in the learning process. One of the media that can be used to support a model of learning one of them is through the web-based internet media. Integration various teaching was a teaching-learning is known as multimodal learning [5].

The combination of cooperative learning model and internet technology as a web-based media sharing is expected to increase student achievement in studying the chemistry of the material, especially on the concept of constant of solubility product (K_{sp}). In the implementation of multimodal learning, teacher can use some related media that suitable

with chemistry matter or even use one of learning management system (LMS) like edmodo.

This research investigates the use of various strategies of learning accomplished by the media run in the methods of cooperative TPS and its effect on the students' achievement. The purposes in this research is to determine the differences of students' learning achievement between the experimental class and the control class.

2. Research method

This research is an experimental research which has one factor, two samples, and one covariable. The factor is the implementation of cooperative multimodal learning of think pair and share (TPS) based on web. Two samples are students from class experiment and control. The experiment class was class that used cooperative multimodal learning of think pair and share (TPS) based on web and control class is class that implement cooperative of think pair and share (TPS) without web. The covariable is students' chemistry prior knowledge taken from the school documentation.

There are three variables in this research. They are independents variable, controlled variable, and dependent variable. The independent variable is the implementation of cooperative multimodal learning of think pair and share (TPS) based on web. The controlled variable is the students' chemistry prior knowledge and also the cooperative learning, and the dependent variable is the students' achievement on chemistry learning. For the students' learning achievement was measured used by achievement test of learning.

The population of this research was grade eleven of science class student of SMA Negeri 1 Mlati in 2013/2014 academic year consisting of 50 students. The sample were represent all of those population which was then divided into class experiment and control. The instruments of this research consist of lesson plan, questionnaire and achievement test of learning. The lesson plan was prepared for five meetings for each class. The lesson plan for class experiment is the lesson plan that implement cooperative multimodal learning of think pair and share (TPS) based on web and the lesson plan for class control is the lesson plan that implement cooperative of think pair and share (TPS) type without web. The instrument should be valid and reliable.

The media that used in this experiment class are powerpoint slide presentation, prezi

presentation, e-book, android application, lectora, video and flash animaton. This media has been validated by the validate (chemistry teachers and peers). Data analysis included normality and homogeneity tests, before the paired sample t-test and the independent sample t-test.

3. Result and discussion

3.1 Design of the cooperative multimodal learning of think pair and share (TPS) type based on web

Cooperative multimodal learning of think pair and share (TPS) based on the web was conducted for six meetings. i.e. five times of meetings was for teaching learning and once for the final test. Teaching and learning were always delivered with a pairing group setting. Teacher divided students into some equal heterogen groups with different levels of students competencies. According to Ibrahim [2], think pair and share (TPS), learners are grouped into several groups with diverse members of ability, gender, race and ethnicity. The first part of this learning model is thinking. in this step teacher give a chance for students to solve the problem of material individually. Second part is pairing, in this step student pairing which other to discuss about the result from the previous step. The last part is sharing, the students present their result and get the feedback from other students and teacher. At the end of meeting, all learners acquired individual quiz on teaching materials and at the time the individual should not help each other.

Each group received instruction consisting of the list of work procedures, learning materials in the format of multimedia (Powerpoint slide, Android app, video, e-book, Prezi and flash animation files) in Edmodo, so the group can start to investigate, analyze, and synthesise the topic. In this experiment, there were four of learning strategies has been implemented. They were demonstration, experiment, discussion, and games based on quiz.

3.2 The Effect of Multimodal Learning to Students' Learning Achievement

Analysis of data using univariate analysis of variance test using SPSS 16.0 for $0.009 < (\alpha)$ of 0.05 which means that H_0 is rejected and H_a accepted. From these results it can be concluded that there is a significant difference on the learning achievement of students in implementing multimodal learning through cooperative learning think pair and share (TPS)

with a web-based classes using cooperative think pair and share (TPS) on the constant of solubility product material, if the learners' prior knowledge was statistically controlled.

Some of the factors that cause differences in learning achievement between the experimental class and the control class is the higher intensity of interaction between teachers and students in the experimental class because learning is done not only in the classroom when teaching, but also done outside of class using Edmodo. Students can choose their preferred media because teachers provide some instructional media that they can use. Sri Hartantiningrum [9] said that the selection and use of instructional media appropriate to the characteristics of the students can enhance their learning achievement. Experimental model of learning in the classroom more varied such as the experiments, demonstrations, discussions, and games so that the learning process is not monotonous and boring. Learning styles of the learners, the characteristics of the constant of solubility product material, and other factors that affect student learning outcomes also influence in students' learning achievement.

4. Conclusion

The conclusion of this research is there is a significant difference on the learning achievements of students who apply multimodal learning through cooperative learning think pair share (TPS) web-based as compared to a learners who implement cooperative learning think pair share (TPS) without web on the *K_{sp}* material class XI SMA Negeri 1 Mlati if the initial chemical knowledge learners were statistically controlled.

Authors would like to suggest:

1. If further research or similar research is carried out, the media should be validated empirically beforehand to see how effective the media when used by learners.
2. If a similar study is conducted, should be determine psychomotoric aspects of the

student, that show how learning process happen in the class.

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