The 2nd INTERNATIONAL SEMINAR ON EDUCATION TECHNOLOGY

ISET

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Conservation Education in the Era of Innovation and Technology

Auditorium Unnes, Sekaran, Gunungpati, Semarang, Indonesia
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Organized by:
Postgraduate Program
Semarang State University

In Collaboration with:
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Foreword

Technology advancements provide great benefits to the lives and living. Everything becomes easier and practical, while works could be more efficient from the aspect of time, money and manpower. On the other hand, unresposible technologies could also cause damages to the environment, neglection of the genuine social and cultural values, and even could affect human character. Therefore, conservation ideas and efforts are very urgent to safeguard the impact of destructive technology.

The 2nd International Seminar on Educational Technology (ISET) is an international seminar and a scientific collaborative forum organized by the Postgraduate Program of Semarang State University in order to celebrate the 51th Dies-natalis of Semarang State University and the 19th Anniversary of Postgraduate Program. ISET invites researchers, practitioners of industrial sector, public and private stakeholders, educators from various fields come from different countries to exchange and share knowledge. More specifically, 2nd ISET is expected to provide acceleration of technology and innovation, progression of industry and economic growth, solve multidimensional crisis, and enhance education reformation.

Theme

Conservation Education in the Era of Innovation and Technology

Topics of interest for submission include but are not limited to:

1. Development of new and environmental friendly technology and engineering, bio and nano technology, bioenergy
2. Impact of technology emergence to environtment and public health, medical technology, pharmacetics, health and safety
3. The role of education in internalization of consevation values/insight, including: education management, administration, education technology, curriculum, teaching and learning approach, evaluation and assessment method.
4. Conservation of arts and culture, include: traditional ornamentation and crafts, performing arts, fine arts and sculpture
5. Creative economy based on local potential and wisdom in efforts to increase competitiveness in the era of Asean Economic Community (AEC)
6. Development of human resources and capital, vocational and career education, entrepreneurship, technopreneurship, and cyberpreneurship
7. Information and communication techno-logy, language studies, oral tradition
8. Natural Science, Social Science and Humanity

Welcome from the Rector of Semarang State University

I take great pleasure in welcoming you to 2nd International Seminar on Education Technology (ISET) in Semarang. The seminar is conducted in the context to 51th years Semarang State University and 19th Postgraduate Program anniversary.

Seminar is the right place to enhance our academic quality and awareness on issues related to "conservation" as one of our vision. It will be privilege for me to open this seminar today, where all researcher, expert, and academics sit together for knowledge sharing and discussion. The issues of the seminar is in line with the vision of Semarang State University as a conservation university, not only for environment issues, but also in character building.

Conservation values can be proliferated by the awareness to the cultural heritage, and in turn, can be developed by embarking from conservation and local values. Therefore, this seminar will give a great contribution to our effort to proliferate the cultural preservation as an integral and significant part of our national identity.

I extend my gratitude to all the key speakers for attending, and the ISET committee for their efforts to organize this prestigious event. I wish all the speakers and participants of this International Seminar could get the best benefit of this special event.

Prof. Dr. Fathur Rokhman, M.Hum.
Rector of Semarang State University

Welcome from the Director of the Postgraduate Program

Postgraduate Program of Semarang State University is intends to enhance the academic atmosfeer through seminars. At least 5 seminars national and international are conducted every year. The 2nd International Seminar on Education Technology is a special seminar organized to celebrate the 51th anniversary of Semarang State University and . I am very pleased to provide some introductory remarks for the Program Book of the seminar.

I wish to thank the invited speakers for their great attention in sharing their knowledge, and also to the participants for attending the seminar. I would also like to congratulate the committee for the hard work, thoughts, and time dedicated to this seminar.

With more than 800 participants, the seminar examines issues concerning the education in the era of technology., there will be a stronger bond amongst academics, professionals, teacher, students especially those with the interest in education. Postgraduate Program of Semarang State University will always play its significant role in mediating this important task.

I wish you all a wonderful seminar.

Prof. Dr. Achmad Slamet, M. Si.
Director of Postgraduate Porgram
Semarang State University

Welcome from the Chair of Organizing Committee

The year 2016 is declared by Unnes as the Year of Innovation Acceleration, indicate commitment to technology advancement. However, as the university of conservation, Unnes is also concern about embedding the conservation values.

After the great success ISET in October 2014, we are coming back with the 2nd ISET 2016, with the theme Conservation Education in the Era of Innovation and Technology. More specifically, 2nd ISET is expected to provide acceleration of technology and innovation, progression of industry and economic growth, solve multidimensional crisis, and enhance education reformation.

The 2nd International Seminar on Educational Technology (ISET) is a scientific forum organized by the Postgraduate Program of Semarang State University in order to celebrate the 51th Dies-natalis of Semarang State University and the 19th Anniversary of Postgraduate Program.

It is a pride for us, that this seminar is organized in collaboration with two major universities in Semarang, the University of Muhammadiyah Semarang (Unimus) and Sultan Agung Islamic University (Unisula), integrated by utilizing two-way teleconference technology.

On behalf of the Organizing Committee, I would also like to express my gratitude to our invited speakers Prof. Dr. Abdul Latif Ahmad from Universiti Sains Malaysia, Associate Prof. Atchara Purakom, Ph.D from Kasetsart University, and Gregor J. Sahler from Sparkassentiftung für Internationale Kooperation, for their attendance to share their knowledge. I would also like to welcome all of participants of ISET. And last but not least, for all the committee members, thank you for your best efforts and hard work.

Dr. Ir. Rodia Syamwil, M. Pd.
Chair of the Commitee

Invited Speakers

Prof. Dr. Abdul Latif Ahmad

School of Chemical Engineering, Universiti Sains of Malaysia

Prof. Dr. Abdul Latif was the Dean of School of Chemical Engineering, USM for almost 6 years (2005-2010) which later promoted to be the Research Dean, Science Fundamental Platform for 3 years (2010-2012). He obtained his BEng, MSc and PhD from the University of Wales, Swansea, UK. When he was promoted to his professorship, he was then the youngest professor being promoted. He has a wide experience in administration and research. He has put the School of Chemical Engineering, USM on the global map as top 100 Faculty in the world according to QS ranking. He involves actively at Ministry level in many committees and different Task Force related to research policy and research grant evaluation. Numerous local universities invited him to share his experience as a mentor to junior lecturers. Being a Chartered Engineer and a Fellow to The Institution of Chemical Engineers (IChemE), UK, he is frequently being appointed by IChemE to accredit Chemical Engineering Program in Europe, Australia, New Zealand, Sri Lanka, Singapore and Malaysia. He is an internationally renowned researcher and an internationally acclaimed award winning researcher in membrane science and technology. Due to that, the King Saud University has appointed him to hold the Geoscience Chair to help King Saud University's researchers to lift up their research visibility internationally. His enthusiasm and dedication towards his research works have been reflected in his achievements in winning numerous scientific invention awards. To-date, a total of 50 personal achievement awards and 69 research product awards have been won. Recently, he was awarded by The Ministry of Higher Education Malaysia as the recipient of The Malaysia's Rising Star Award 2015. He was listed by the Thomson Reuters New York as The World Most Influential Scientific Minds 2014 and the country has selected him to be one of the recipients of Merdeka Award 2014. Due to his outstanding achievement in research, the Korea Invention News has awarded him with the World Inventor Award for two years in a row (2013 – 2014). In fact, Prof. Latif was bestowed the TWAS Prize in Engineering Sciences 2012 by The Academy of Sciences for the Developing World (based in Italy) and he was appointed as the Fellow of the Academy Sciences of Malaysia. In the same year, he was also received the Rotary Research Gold Medal Award, presented by the Rotary Club of Kuala Lumpur Di Raja. On top of that, the Academy of Science Malaysia has recognized him as one of the recipient of the Top Research Scientist of Malaysia (TRSM) for the year 2012. He was the sole Asian recipient of the Saudi Arabia Prince Sultan Bin Abdulaziz International Prize for Water in year 2006, besides being awarded the 20th Khwarizmi International Award from Iran. His active participation in scientific research has also been exhibited by being the recipient of multiple research grants in various disciplines sponsored by government and non-government bodies, with a cumulative value of more than RM 29.9 million. His capability in carrying out quality research work of international standard has been further supported by publication of more than 314 articles in high impact factor international refereed journals, with current cumulative citation number of 8394 and h-index of 44. As a tenacious educator, he showed dedication towards the supervision of postgraduate students, by successfully graduating 30 PhD and 60 master students. With his persevering attitude, he is veritably a source of inspiration to hundreds of his former students spread throughout the globe.

Associate Proffessor Atchara Purakom, Ph.D.
Kasetsart University Thailand

Curriculum Vitae
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Education Background

2014 Post-doc research in Physical activity and Health in aging
University of Porto, Portugal
2010 Ph.D. in Human and Social Development
Naresuan University, Thailand
1998 Master degree in Education (Health Promotion)
Chiang Mai University, Thailand
1991 Certificate in Tourism
Sukhothai Thamathiraj University, Thailand
1990 Bachelor science in Nursing
Budhachinnaraj Boromrajonani nursing college, Thailand

Professional experience

2006-now Professor in health education and health promotion
2009-2015 Deputy of head department of physical education and sports
2010-2015 Director of M.Ed. (Health promotion)
2010-2011 Project Manager in health promotion evaluation in National housing Authority project
2014-2015 Project Manager in Thailand active aging project supported by Thaihealth promotion foundation
2015 Head researcher of report card project in western region, Thailand (Physical activity for kid)

Research and publication

1. Atchara Purakom, Ajchareeya Kaisiyapat, Kasem Nakornkhet**.** 2015**.** Association between sedentary behavior
2. and cardio-metabolic risk in Thai active older adults. Proceeding of ACPES 2015**.** Semarang University, Indonesia.
3. Purakom, A. 2014. Community-based Physical Activity Inverventions to Promote Thai Older
4. Adult's Health : A Systemic Review. Asian Confernece for Physical Education ans Sports Science 2014. 6-9July, Singapore.
5. Purakom, A., Nakornkhet, K, Tanoomsuk, T., Pupanead, S., Seabra, A. Carvalho, M.J. 2014.

6. Association between physical activity , functional fitness and mental fitness among Thai older adults, Nakornpathum, Thailand. AJESS, August 11(21).
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9. World Conference on Health Promotion, 25-29 Ausgust Pattaya, Thailand.
10. Purakom, A., Nakornkhet, K, Tanoomsuk, T., Pupanead, S., Carvalho, M.J. 2013. Association of
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12. Thailand : A Pilot study, ISBNPA. May 22-25th, Ghent, Belgium.
13. Purakom, A. and Mahingsa, Y. 2012. Health promotion behavior in Bachelor students , Ksetsart University, Kamphaeng sane campus, , 10th annual conference in agricultural kamphaeng-sane**.** Nakornpathum.
14. Purakom, A. 2011. Capital Budgeting in sports and exercise for health promotion**.** Journal of Sports science and Health**.** 13(3)**.** September-December.
15. Purakom, A. 2010. Knowledge sharing network in youth in summer camp. Kasetsart Journal (Social science):30(1). January-April.

Personal Interests

1. Physical activity in older adults
2. School health Programe
3. Health Promotion in community
4. Tourism

Training and Commitee

1. Role of Education Assurance , Kasetsart University (2015-2016)
2. Measurement of Physical activity , early network career Webinar , ISPAH, 2016 (2016)
3. Committee of Asian Council of Physical Education and Sport (2015-2016)
4. Committee of National Physical activity conference (2015)

Gregor J. Sahler
International Business Administration Senior Advisor
Sparkassenstiftung für Internationale Kooperation, Germany

Work Experience

Since 12/2014 Saving Banks Foundation for International Cooperation (SBFIC) Senior Advisor in Indonesia Advising ASBANDA, Bank Jateng and several other BPDs on Micro Finance and Financial Literacy

09/2013 – 11/2014 German Development Institute (DIE), Bonn Professional research project Research-based consultancy on the on-going fiscal decentralization of property taxes in Indonesia as a mean of development finance

02/2012 – 08/2013 ProCredit Holding AG & Co. KGaA, Frankfurt am Main Employee in the department Supervision & Capital Planning MSME financing in South America, Sub-Sahara Africa and Eastern Europe Project implementation of Basel III regulations on group level, in Ghana and Romania

06/2011 – 09/2011 Fraport Saudi Arabia, Jeddah, Saudi Arabia Business Development King Abdulaziz International Airport Consulting in the field of business development

06/2010 – 02/2011 NORDCAPITAL Portfolio Management GmbH & Cie. KG, Hamburg Portfolio Management Analyzing and valuation of shipping investments that are traded on the secondary market

07/2009 – 10/2009, Fraport AG, Frankfurt am Main 10/2008 – 02/2009 International Human Resource Development Design and conducting of training in the field of intercultural competence

Education

10/2009 – 11/2011 Master of Arts – International Business Administration University of Hamburg Core studies: International management, Finance Grade: Excellent (1.4)

10/2005 – 09/2008 Bachelor of Arts – International Cultural and Business Studies University of Passau Core studies: Business administration, South-East Asian studies Grade: Very good (1.8)

08/2007 – 04/2008 Darmasiswa scholarship of the Indonesian government University of Indonesia, Jakarta Core studies: Language and culture of Indonesia Month-long study excursion in Indonesia

08/2003 – 06/2005 Abitur – Georg-Christoph-Lichtenberg-Oberstufen-Gymnasium Bruchköbel Grade: Excellent (1.4)

08/2002 – 06/2003 CETUSA scholarship Foothill High School, Henderson, NV, USA Grade: Excellent (1.0)

Personal Skills

Languages German – native speaker

English – fluent (written and spoken)
Indonesian – very good command (written and spoken)
Spanish – good command (written and spoken)

Computer skills
Excel – excellent skills
PowerPoint – excellent skills
Word – strong skills
Atlas TI – strong skills
Stata – basic skills

Recent soft skills trainings

Presentation and facilitation (3 days)
Team building and conflict management (2 days)
Professional writing (2 weeks)

Table of Contents

The Development of Multimedia Interactive Science Learning Material at Students 5th

Jupriyanto

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Abstract. The study focus the development learning material on the material respiration and digestion. The purpose of this study was obtain a valid learning material then practical and effective learning. The research is development research with four-D models. The population in this study were elementery school students of SD Negeri Banjarsari 1, SD Negeri Banjarsari 2, and SD Negeri Kalisari 3 at 5th class. The variables of the material validation, multimedia validation, the response of teachers respons of students', and students test.. The average value validator of interactive multimedia 3.82 so that the study was supported to be valid. The positive response of students' interest in learning to follow and teachers gave very good comments, the teaching-learning device is so practical to used. Resulted of class control has mean 67.25 and experiment class has mean 81.75. Thus, interactive multimedia was effective.

INTRODUCTION

Challenges in the world of education in Indonesia one of which relates to the availability of textbooks and reading interests of students in the school. Surveys conducted by the United Nations Educational, Scientific and Cultural Organization (UNESCO), quoted from Republika (2013), in 2012 stated that Indonesia's first contested books to be read by 1000 people or read in Indonesian index of 0.001. Compare with Singapore 550 books read for 110 people. In 2012 also, Indonesia claimed the No. 124 out of 187 countries in terms of Human Development Index (HDI), especially in meeting the needs of education.

Schools as an educational institution, is very important in the promotion of human resources. School program regularly and systematically implemented, with adequate facilities and infrastructure and the role of teachers as counselors will produce a quick understanding and reasoning for students in decision-making. The success of course also determined by many factors one of which should be no linkage between learning components such as the objectives, methods, media, materials, and evaluation of learning.

Rapid advancement of science and technology is a development that gives access to change people's lives, there are many problems that can be solved with the mastery of science and technology. These changes also bring the society into the global competition intensifies, forcing a nation should strive to develop and improve the quality of human resources to be able to participate in global competition.

Learning in schools by making use of technology and information, especially in primary schools is very low. Based on data from the Center for Technology and Communication (Pustekkom) contained in kompas.com (2009), the number of primary schools have computer labs only reached 10 percent. This amount is much lower than the existence of a computer lab at the middle school.

One form of renewal of learning is to use effective instructional media, engaging and meaningful for students. In addition, if the media is designed and crafted the better the media was in its function as a channel message, for certain topics the media can be better than the teacher in delivering the message, the better the medium smaller distortion and better the message was received students.

Interactive multimedia is expected to find a pattern that is more effective in learning, so any learning material can be presented in such a way and expected to be more attractive, effective and adheres to, and the results can be applied to any subject. Especially to meet the needs of teaching in the elementary media to maximize the utilization of existing computer laboratorium so its use can be applied in addition to extracurricular learning computer.

Based on the background, the issues raised in the development of interactive multimedia teaching materials are :

5. How does the development of teaching materials engineering science with interactive multimedia learning material digestion and breathing?

6. How can the effectiveness and practicality of interactive multimedia teaching materials developed?

Multimedia interactive learning material

Teaching materials will be meaningful for students and teachers if the teaching material is organized through a design that enables one to use it as a learning resource. Steketee (2006) explained by integrating ICT as a learning resource in regular classes, will provide innovative ways for students to learn . While Nusir (2012) describes the use of technology impact change with the use of conventional learning models face towards computer -based learning. Forms of utilization models in the computer-based interactive multimedia learning according to Rusman (2005) may be a drill, tutorial, simulation, and games. One purpose of learning with interactive multimedia is wherever possible replace the teaching and learning process in a conventional educational system.

There are three types of the use of multimedia in learning. First, multimedia is used as one element in the classroom. Exercises and tests on the first type is not given in the multimedia package, but in print form given by the teacher. Second, multimedia is used as a self-learning materials. Unlike the first type, the second type throughout the instructional needs of users satisfied entirely in the multimedia package. Third, multimedia is used as a medium only in learning. The entire learning facilities that support learning objectives have also been provided in this package. IPA is a science that needs to be mastered in order to increase human resources and is one of the subjects that occupy an important role in education. Science education is expected to become a vehicle for students to learn about themselves and the environment, as well as prospects for further development in applying it in our daily lives. Some concepts in science come from experience or direct observation, it is often referred to as a concrete concept. There is also in addition to doing the direct experience also requires abstract thinking. Natural Sciences in essence is to answer the question empirically truth through scientific methods.

RESEARCH METHODS

The model of development used to develop interactive multimedia teaching materials in the research are Four-D model of the modification of the model Thiagarajan, Semmel, and Semmel. Modifications were done is a simplified model into three phases, namely the definition (define), design (design), and development (develop). For the deployment phase (disseminate) is not done.

Stages of development of Interactive Multimedia Instructional Materials (BAMI) in the study described as follows;

1. The definition phase (Define)

   Pendefinisisan phase aims to establish and define the learning needs by analyzing the goals and limits of the material. Definition phase activities include:

   a. Analysis Library
   b. Competency analysis
   c. Material analysis
   d. Formulate learning objective

2. Stage Design (design)

   This stage aims to design or initial design of Interactive Multimedia Instructional Materials (BAMI). Based on the definition phase, the researchers compiled a first draft that BAMI products that will be developed. At this stage steps to create interactive multimedia teaching media is designed to be based on material analysis, competency analysis, and learning objectives that will be done.

3. Development Phase (develop)

   Starting with the product development phase pendefinisan keterbutuhan analysis of teaching materials. Draft I designed after the formation of needs analysis taking into account the learning objectives and learning indicators. The next step to validate the first draft by multimedia specialists and subject matter experts. The tests showed I Draft multimedia included in both criteria with notes the need for revision of the product.

RESULTS AND DISCUSSION

The end product of the research and development of teaching materials are shaped IPA interactive multimedia. Product development done in several stages. The end product produced in this development is the Interactive Multimedia Learning Material (BAMI) which can be used in primary schools to Class V.

The end product is BAMI tutorial presents the lessons related to stimulus response. Piaget stated that the learning abilities Differ at each developmental stage (Roblyer, 2006). Theory of cognitive development view that children's learning abilities according to their stage of development and the advancement of learning should be adapted to the exploration stage of development of students. In this case BAMI can provide "electronic manipulatives" to support the exploration activities for the various stages of development.

In general, voiced their validator BAMI included in either category but with a slight revisions that need to be done. Some components in the BAMI be revised. Revisions contained in the main menu font changes multimedia titles. Subsequent changes contained in pictorial symbols of each menu. Subsequent changes contained in subtittle change. The revision was carried out with no change in the content of the initial kontens assessed by validator own good.

Validator suggested revisions and additions there is the addition apersepsi author. Apesepsi intended to stimulate users to be interested in interactive multimedia. Author contains the name of the multimedia-makers aiming to avoid plagiarism media by others. Overall, the validator provides 3.84 value included in either category.

Draft I, which has been validated and revised to be further tested Draft II. Experiments performed with the test data, the limited testing and extensive trials. The trial involves a fifth grade students from each school, the SD Negeri Banjarsari 1, SD Negeri Banjarsari 2, and SD Negeri Kalisari 3. Trials with the validity of data to produce data about all of the questions contained in interactive multimedia valid. 0942 about the reliability level greater than 0.05 otherwise reliable in very high category. Data in interactive multimedia declared valid and reliable.

Limited test resulted in an average value of 76.85 students. The level of student interest is as high as 4:35. The results of interviews with teachers on a limited trial demonstrated effective use of interactive multimedia in teaching with adequate computer facilities. The use of BAMI as the embodiment of the use of learning technology can improve students' understanding and innovation of teachers in delivering learning materials. Steketee (2006) explained by integrating ICT as a learning resource in regular classes, will provide innovative ways for students to learn. This exposure, supported by the framework and the implementation of relevant if the potential of ICT to be realized.

It seems clear that learning to use BAMI able to increase student learning that stems from the concentration of students . Data conducted extensive testing on the experimental class and comparison to the control class . Both classes are normally distributed and heterogeneous. There are differences in the average results of tests conducted on these two classes. An average of 81.75 experimental class and the average grade 67.25 so BAMI controls better and more effectively used in learning.

CONCLUSION

Interactive Multimedia Instructional Materials valid, practical, and effective and fit for use as a learning resource . It is shown from the results of validation 3.84 included in either category. Results from limited testing shows scores of students ketetarikan 4.5 into the category of a very good and comprehensive test score of 4.6 is also entered in the excellent category. Test scores obtained in the pilot area in the experimental class 81.75 with a comparator control class 67.25. BAMI effectively used in learning.

The end product is recommended interactive multimedia can be used in learning science in elementary school. Selection of color gradations determine student interest in the multimedia show. Color adjustment is determined by the characteristics of elementary school students into consideration in the development of interactive multimedia. Selection of simple animation also affects the interest of students to the interactive multimedia.

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