PROCEEDING

International Seminar
Learning, Community
And Technology

JAKARTA, JUNE 8, 2011

FACULTY OF ENGINEERING, UNIVERSITAS NEGERI JAKARTA
in colaboration with INDONESIAN PROFESSIONAL ASSOCIATION OF EDUCATION TECHNOLOGY

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Dean of The Faculty of Engineering , State University of Jakarta

Your Excellency Rector State University of Jakarta
The Honorable Director of Institutional Cooperation, MoNE, RI
The Honorable President of IPTPI
The Honorable Managing Director of SGS
Distinguished Guest, Ladies and Gentlemen

Assalamulaikaum Wr. Wb.

It is my great honour and pleasure that I. can welcome you here to our Faculty of Engineering, State University of Jakarta, in connection with the conduct of the event the International Seminar and the Assignment of the Certificate of ISO 9001: 2008 and IWA 2: 2007 for The Faculty of Engineering , State University of Jakarta

This seminar is conducted as follow-up of the cooperation between The Faculty of Engineering , State University of Jakarta with Indonesia Professional Association for Educational technology (IPTPI). As you might have been aware that this seminar takes as its theme Learning Community and Technology. This theme include the sub-theme: (1) Cyber Learning: Design and Development; (2) Social Networking for Teaching and Learning; (3) Employability Skill Teaching and Learning New Direction in Continuing and Vocational Education; (4) New Direction in Education: Vocational and Continuing Education; (5)Learning Community: Design and Development; (6) Indigenus Based for Learning Community and Development; (7) Human Peformance Technology on the Learning Organization. The choice of the above theme and sub-theme reflect our visions to the needs of substantiating the orientation of our practice of vocational teacher education so that it can anticipate all the challenges to the next generation will face and therefore all the needs can be fulfilled. Technology are an essential part of the world of work in today's global knowledge society and Learning Organization. As modern labour market , learning community are almost unthinkable with Information Communication and Technology, digital literacy is increasingly considered as an essential competence. Education must keep pace with these global trends and development, especially in the area of educational technology.

From my deep side of my heart, I therefore would like to extend my sincere gratitudes and highest appretiation to all Participants and Paper Presenters as well as the Committees for all you support for the success of the seminar. In particular, I would like to express my highest thanks to The Rector of State University of Jakarta, for the strong support and commitment to the success of this seminar. The Director of Institutional Cooperation, Minister of National Education, Republic of Indonesia; The President of IPTPI; Managing Director of SGS. Last but not least, to all the sponsors of the event, please accept my sincere gratitude for all your significant contribution to this event.

Finally, have wonderfull discussion and knowledge sharing during the seminar. To the Rector of State University of Jakarta, Prof . Dr. Bedjo Sujanto, I Cordially request that *your excellency could officially open this seminar and receives the Certificate of ISO 9001: 2008 and IWA 2: 2007* for The Faculty of Engineering from SGS.

Thank You
Prof. Dr. Basuki Wibawa

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International Seminar on "Learning, Community, and Technology"
Universitas Negeri Jakarta, June 8, 2011

Your Excellency Prof. Dr. Bedjo Sujanto, The Rector of Universitas Negeri Jakarta
Your Excellency Prof. Dr. Ahmad Jazidie, Director of Institutional Cooperation, DGHE
The Honorable President of IPTPI
The Honorable Managing Director of SGS
The Honorable Paper Speakers

Distinguished participants,
Ladies and gentlemen,
Assalamu'alaikum Wr. Wb.

On behalf of The Organizing Committee and in this wonderful opportunity, I would like to give my special appreciation to the Rector of Universitas Negeri Jakarta and the Dean of Faculty of Engineering who have done all the ways to hold this important seminar. My special gratitude goes to all of the paper speakers who have delivered the paper to this event with various topics. My special awards to the organizing committee and The Indonesian Professional Association of Educational Technology (IPTPI) who have been working hard to make this great event possible. It is really a great pleasure for me to welcome you all to this international seminar.

Dear distinguished guests and participants,
This seminar, with the theme of "Learning, Community, and Technology" with intended to develop, utilize, manage learning community, and to improve performance in social networking for teaching and learning, cyberlearning, employability skills, new direction in vocational education, and indigenous-based technology. The objective of the seminar goes hand in hand with the development of education in the globalization era which requires join networking to communicate with people from other institutions and other countries.

In the long-term strategic plan of higher education strategy, it is stated that the competitiveness of human resource keeps increasing nationally as well as internationally in respond to the improvement of the use of science and technology in various corporate sectors that lead to the needs of improvement of professionalism in all aspects too. Therefore, higher learning institutions as well as Universitas Negeri Jakarta are urgently in need to provide graduates with relevant skills to improve the competitiveness their graduates. We need to establish partnership or network programs with corporate worlds, relevant institutions to make use of skills and the best practices from other higher learning institutions.

Ladies and gentlemen,
The participants in this seminar are coming from universities, government, and public who are interest with the themes relevant to their jobs and activities. I hope that we can make use of the time for discussion, sharing ideas, as well as for identifying ways and solutions to improve our professionalism in conducting teaching and learning activities. At the end of the seminar, it is expected that we will have ideas and make us more creative in doing our job. I believe that the seminar will provide with useful knowledge and better experience that benefit us and our institution as well. I also hope that the seminar will improve the network and collaboration among participants for better communication in the future.

Finally, I would like to say "Have a great seminar and may God the almighty always bless us". I wish all of you good luck and a great success.

Thank you.

Jakarta, June 8, 2011

Ivan Hanafi

MODEL DESIGN FOR VIRTUAL LEARNING IN MATHEMATICS

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Abstract

Model of virtual learning in mathematics lessons is learning that is designed in the classroom (computer lab) which uses interactive web media, so there is interaction between students and students, students with the media, and students with teachers. In the virtual learning model is designed every single computer is used by two students, which aims to give students collaborate in learning so that there is interaction between them. Interactive learning materials designed so that students can be motivated in learning mathematics. Teachers in this case as facilitators, which motivates students verbally and non verbally (using media website). The work of students in the form of training, evaluation or questions and responses will be stored in the program created, to facilitate teachers to recap students' work.

Keywords: design, virtual learning model

Introduction

The development of information and communication technology (ICT) in recent years, is growing rapidly. This is changing the paradigm of the public in finding information that is not just limited to newspapers, radio and television, but also the source of cyberspace (the internet). One of the most significant impact in the development of ICT is in the field of education, where ICT acts as a medium of communication and information from teachers to students containing information on education, but it also means the media is presenting the idea and the idea of teachers in delivering educational material.

In learning mathematics, students will be more interested if the interactive media can be delivered to them. Presentation charts or examples of problems that are animated will create increased interest in student learning. The task of a learning designer is to present particular media such as gaming math games, so that students will continue to do all it can to resolve these games.

Designing an Internet-based learning (virtual) must be prepared carefully, with a scenario designed Internet-based learning. In designing a virtual learning does not mean merely putting teaching materials on the web, but need to be designed learning that invites the involvement of students actively

and constructively in their learning process to the media, to make the learning process a fun, creative, not a boring process.

The process of learning mathematics is usually done in the classroom by using the media board and other supporting media. The presence of mathematics learning process is also conducted in the laboratory using computer media. Based on observation, often times the utilization of computers has not been designed optimally. Suppose that we often see, the lack of computers resulted in students having to sit in groups of 2-3 people in one computer, but the media is not designed for that (the media designed for 1 person only 1 computer).

Accordingly, this article will focus on how to design virtual learning model based on the limited amount of computer. Virtual learning model which will be designed that combines face-to-face meetings and electronic learning to increase contributions and interactivity among students. Through face-to-face students can get to know fellow students and accompanying teachers. This resulted in a familiarity that supports them in virtual collaboration. Proper preparation prior to implementing a virtual learning plays an important role for smooth learning process. All preparations such as scheduling to the technical determination of communication during the learning process are an important step in implementing a virtual learning.

Virtual Learning

Today, many people are interested to implement the concept of virtual learning in the classroom, called the Virtual Classroom (VC). In implementing the concept of VC, adverse effects will occur when the system designers and teachers to implement the concept is too similar to conventional classroom teaching models and fail to recognize that the concept of VC is a hi-tech situation that requires rethinking of the learning process itself. In these conditions, it is impossible for system designers and teachers to utilize all the potential of the application of VC (Clark, 2008). Everyone is always trying to do things in a short time through the use of technology, especially information and communication technology (ICT).

Many groups have developed a model of learning by making material that can be learned independently through the Internet, the LMS, or CD-ROM. Currently, we are familiar with the concept of asynchronous e-Learning. VC concept offers more promising opportunities for collaboration, connections, access to information, visualization is interesting, and encourage the parties involved to be more productive and quicker in understanding the knowledge. Although asynchronous e-Learning is still relevant to the current applied, the concept of VC is able to provide some options more attractive if it is implemented with the right approach (Marie, 2009).

Interaction is an important element in implementing a virtual learning. But is the interaction here is not the interaction between the people but rather the interaction between learners (students) with materials (content) (Hyder, 2007). In virtual learning, teacher control and to control the interaction, with limited time, teachers must be able to ensure that students can understand the material (content) is presented. The most important thing we can do on a process of learning is through interaction. Participation by as much as possible will be able to prevent the students become bored and lose control

over the material. Teachers can simply by calling the names of the students to condition students felt watched and paid attention. If teachers wish to evaluate the level of student participation during the learning process, teachers can relate the material to the project or assignment that involves more than one student. Virtual learning offers many opportunities to interact. In fact, the task or discussion can be made more easily in a virtual learning than in conventional classes that might require restructuring the tables and so forth. The interaction that occurs in a virtual learning can be meaningful interaction between students and teachers, interaction between students and the media, participation of students in a discussion session, or collaboration among students themselves.

Reality of Learning Mathematics

Someone to achieve success in life must learn well to produce satisfactory progress. Learning to make people have ideals, to be achieved, so that will have a future in the future. Everyone will undergo a process of learning to solve problems faced by various ways and ideas to solve the problem.

Many experts say about the notion of learning, one of them according to Nasution (1994), which concluded that learning in a broad sense is a process that allows the emergence of a behavioral change as a result of the formation of the primary response, provided that the change or the emergence of new behavior is not caused by the maturity or temporary changes for any reason. Meanwhile, according Slamet (2003), learning is a process of individual effort to get something new behavioral changes and get something in the interaction with the environment. So from a second expert opinion, we can conclude the sense to learn is when someone changes the behavior of the learning process, so that someone can use his thinking in problem solving and independent with the knowledge that she can from learning.

In addition, according Nasution (1994), to learn something someone requires four fundamental conditions, namely (1) should want something, (2) pay attention to something, (3) do something; and (4) should get something. In other words we can say that to learn someone requires several conditions, namely (1) there must be an impulse or need, (2) there must be a stimulus or a certain signal so that there is a response whether or not a form of motor actions, (3) must exist thoughts or physiological changes, (4) there should be a reward or affirmation of a thing that I learned.

Learning mathematics in school aims to help students think to solve everyday problems using mathematical calculations. In mathematics learning should pay attention to the teacher how to solve math problems, so that students can understand how to solve them and facilitate students in completing the exercises and apply mathematics in everyday life. With the help of the media, will greatly facilitate the students understand the material, one with a virtual learning.

The interest of the students to take math lessons greatly affect the learning of mathematics achievement, given the interest in students studying mathematics can generate creativity of students in learning math that will produce good learning achievement. If students do not have the interest to follow the mathematics then students will have difficulty in understanding the mathematical concept of completion, so the creativity of students in learning mathematics is not good and learning achievement is also not good. The emergence of interest the students to follow the lesson depending on how or learning

methods and media used by teachers in providing learning materials and guidance to students in improving student creativity.

Use of Websites as a Virtual Learning Media

Education experts and Internet experts suggest a few things to consider before choosing a website as a media person in learning (Hartanto and Purbo, 2002), among others:

a. Needs Analysis (Need Analysis). In the early stages, one thing to consider is whether it requires e-learning. This question cannot be answered or answered with an estimate based on the advice of others. Each institution determines its own learning technologies that are different from each other. For that there should be a needs analysis that includes both technical feasibility, economic, and social.

b. Instructional Design that contains the content of lessons, topics, credit unit, teaching materials / curriculum.

c. Evaluation before the program starts, it's good to be tested by taking several samples of people who asked for help to come evaluate.

Last to be aware of the problems frequently encountered are: a. Problems can carry out access to websites such as the availability of the Internet network, electricity, telephone and other infrastructure; b. Problem of the availability of software (the software). How to create the software that is not expensive; c. impact on the existing curriculum; d. Troubleshooting skills and knowledge.

Design of Virtual Learning Model

1. Elections Media

Not all parts of the learning process should be accompanied by instructions from the teacher, there are times when students need time to think and calm atmosphere to do some things independently, for example to understand a reading or doing a task. Teachers can create such an atmosphere with no instructions or deliver the material continuously. Virtual learning process independently of asynchronous e-learning (without any face to face) who carried out without the need of instruction from teachers. In this case, media selection is very important as an idea of instructional materials and teaching methods that you want, and make a fundamental design decision, which was to determine whether more appropriate to use the media delivery on asynchronous e-learning or using synchronous e-Learning.

A lot of problems may be encountered in the selection of the virtual classroom approach (VC). When implemented with no caution, VC may actually bring up the negative aspects that we encounter in a conventional classroom or on media that are not face to face. In that case, which arises as to the stages in the learning process is too oriented to the instructor or teacher as happens in the physical classroom. This will cause students to become bored. In addition, students may feel overlooked by the instructor or teacher. VC as a process that is synchronous (face to face), require a set of different resource than the concept of e-Learning that earlier (Braman, 2008).VC requires the presence of teachers

who are scheduled and all students at the same time. Compared with the conventional classroom, the VC requires the presence of technology resources and psychological resources from teachers and from students. Although the concept of virtual learning comes as a new medium that can save travel costs, the separation between teachers and students also cause a negative impact, namely the lack of control over the attitude of the students during the learning process. To overcome this, it takes a selection of appropriate media and techniques in implementing the concept of virtual learning.

Selection of media in a virtual learning should be logical and instructive. Logic in cost, infrastructure, the needs of students and others, besides, the media must be educated so as to completion of an effective learning process that indicates a change in behavior as a result of learning.

2. Computer Layout

A classroom (computer lab) that has many computers is very useful when groups of students must use the same software simultaneously. The students can work in teams consisting of two or three students and shared using the computer, while teachers may have a projection device to display information for all students in the screen (Smaldino, Lowther, and Russell, 2011). So the computer layout should also be designed in accordance with the needs and the size of the existing space. A computer should design for two or three students, so that cooperation can occur between them in virtual learning.

3. Steps to Designing a Virtual Learning Model

In this article tried to design a virtual learning model using the ASSURE model (Analyze learner; State objectives; Select instructional methods, media and materials; utilize media and materials, Require learner participation; Evaluate and revise) presented by Smaldino, Lowther, and Russell (2011).

a. Analyze learner

The first step in planning a virtual learning model on mathematics lesson is to identify and analyze the characteristics of students, adjusted for the results of learning. This information will greatly assist designers in designing virtual learning (in this case the virtual classroom). What is important in analyzing the characteristics of the students included the general characteristics of the students, who must possess the basic competencies of students (knowledge, skills and attitudes), and learning styles of students.

b. State objectives

The next step is to state standards and learning objectives for math specific as possible. Within NETS for Students there are six Performance Indicators. Each Performance Indicator indicates and outlines what the student should be able to achieve within technological literacy by the completion of a school year. The Performance Indicators are guidelines where the students are aware of the programs goals and what they are attempting to achieve to meet NETS standards. The Performance Indicators are as follows: 1) Creativity and Innovation: Using creative thinking and innovative technology the students demonstrate and develop models and simulations to explore and identify complex systems and forecast possibilities as well as they use existing knowledge to generate new ideas and creative thoughts; 2) Communication and Collaboration: Students use digital media and

environments to collaborate, communicate and interact with other students, teachers and professionals. They also engage in a cultural and global awareness and contribute to project teams to produce original works or solve problems; 3) Research and Information Fluency: Students apply digital tools to plan, organize and gather information, in order to be able to inquire, analyze, organize and evaluate information; 4) Critical Thinking, Problem Solving and Decision Making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources; 5) Digital Citizenship: Students demonstrate personal development to be lifelong learners because they are aware of the human, cultural and social issues related to technology and they practice ethical and legal digital behavior; 6) Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems, and operations so they are able to select, transfer, understand and troubleshoot various systems and applications productively and effectively (Wikipedia, 2011).

c. Select instructional methods, media and materials

This stage is to select the method, media and methods to be used. In virtual learning, it is to use a cooperative method of virtual classroom. This is useful for the interaction between students and students, students with the media, and students with teachers. The medium used is designed website offline (using the LAN / Intranet), this is done for loading the material faster than using the Internet that require a connection further. The material to be applied is a matter of mathematics that could be discussed further.

d. Utilize media and materials

The following stage designer designing media that will be used to change media interactive website. Interactive learning materials designed so that students can be motivated in learning mathematics. Teachers in this case as facilitators, which motivates students verbally and non verbally (using media website). The work of students in the form of training, evaluation or questions and responses will be stored in the program created, to facilitate teachers to recap these students' work. To anticipate the shortage of computers in the classroom, a computer designed for two or three students. Learning strategy should also be designed using the cooperative learning method, so that students feel motivated by the presence of teachers in a virtual classroom.

e. Require learner participation

The involvement of students actively indicates whether the media used effectively or not. Virtual learning must be designed to create activities that allow students to apply knowledge or new skills and receive feedback regarding the suitability of their business before and after learning. Provided training independently in each material is independent evaluations which may provide feedback. This feedback will be recorded automatically in the program, so that teachers can evaluate students' abilities.

f. Evaluate and revise

After the media website is finished, first is to carry out an evaluation of media specialists, content experts, and other design experts. After that, revising step, proceed with evaluating the "one to one" to see the legibility of the media website. The evaluation is applied to students who have low

skills, medium and high. Next is the evaluation of small groups consisting of eight to twelve students. After that the media can be tested spaciousness website to see the effectiveness and efficiency of the media in virtual learning. Evaluation is done continuously until the medium used in virtual learning is considered effective and efficient.

Conclusion

Virtual learning for learning mathematics is one of the methods which can be implemented by combining the benefits of direct interaction and the use of virtual technology. Virtual learning can work well if the interaction and collaboration among the parties involved (i.e. teachers and students) to involve in a controlled and dynamic process. In practice, virtual learning offers a variety of techniques and tools of mathematics items that can be used to make interaction and collaboration during the learning process takes place. To maintain quality and control of the virtual learning process is started, the teacher should be able to choose the method and visualization tool for mathematical symbols right in order to maintain students' motivation to continue to contribute and interact with the material presented by the teacher. Teachers in this
case as fasilisator, which motivates students verbally and non verbally (using media website). The work of students in the form of training, evaluation or questions and responses will be stored in the program created, so that facilitates teachers to recap these students' work. Implementation of virtual learning in mathematics lessons offer very promising opportunities for the development of a new learning model that is more attractive, interactive, dynamic, hi-tech, and control.

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