STUDENT PARTICIPATION MODEL IN E-LEARNING

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This thesis is dedicated to…

Suami, Mohamad Azrul Izwan who always give me full of supports and spirit without failed.

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ABSTRACT

Collaborative learning becomes a popular method to be a potential approach in meaningful learning and motivate student's participation. However, its use has yet to be implemented in the current education system. E-learning is a platform that promises the full usage of ICT and technology in learning process and contains social media tools that support collaborative learning. However, the usage of e-learning and student's participations are low, where the social media tools for collaborative learning are not fully utilized. In fact, the e-learning is only being used for disseminating learning. Interactions among students in e-learning are still very poor and the learning process is not effective. It is also found that students fail to stimulate their participations until the end of the course. Other issues in collaborative learning assessment is analyzing the log to measure student's participation that gives equal grade of performance to each student. This measurement is unfair because normally each student has different participation levels. This research proposes a Student Participation Model (SPM) that contains three main components which are social learning component, collaborative learning process component and collaborative learning assessment component. The main purpose of this model is to increase student's participation and the usage of e-learning as well as to improve collaborative learning assessment. The social components include the Person: namely instructors, students and collaborators, the Behavior of a person's action: namely Sharing, Exchanging and Exploring, and the Environment which is the e-learning technology. Meanwhile, the collaborative learning process of SPM is based on the Task-oriented collaborative learning model. In addition, the collaborative learning assessment for students is the log analysis that includes the students' attitude and their participation levels. The model is able to generate students' work progress result, participation percentage (individually and group) and also students' attitude in e-learning (passive and active). This model is verified using expert validation method. The expert validation method is used to validate the effectiveness of model. It is found that the experts agreed that the model is relevant to apply, understandable and able to identify students' participation.

ABSTRAK

Pembelajaran kolaboratif menjadi kaedah popular sebagai pendekatan yang berpotensi dalam pembelajaran bermakna dan memberi motivasi kepada penyertaan pelajar. Walau bagaimanapun penggunaannya masih belum dilaksanakan dalam sistem pendidikan semasa. E-pembelajaran adalah satu platform yang menjanjikan penggunaan penuh ICT dan teknologi dalam proses pembelajaran dan mengandungi alat media sosial yang menyokong pembelajaran kolaboratif. Walau bagaimanapun, penggunaan e-pembelajaran dan penyertaan pelajar adalah rendah di mana alat-alat media sosial untuk pembelajaran kolaboratif tidak diguna sepenuhnya. Malah, e-pembelajaran hanya diguna sebagai menyebarkan bahan pembelajaran. Interaksi di kalangan pelajar dalam e-pembelajaran masih rendah dan proses pembelajaran tidak berkesan. Di samping itu, didapati bahawa para pelajar gagal untuk merangsang penyertaan mereka sehingga akhir pembelajaran. Isu lain dalam penilaian pembelajaran kolaboratif adalah mengenai teknik analisis log untuk mengukur penyertaan pelajar. Ukuran ini tidak adil kerana biasanya setiap pelajar mempunyai tahap penyertaan yang berbeza. Kajian ini mencadangkan Model Penyertaan Pelajar (SPM) yang mengandungi tiga komponen utama iaitu komponen pembelajaran sosial, komponen proses pembelajaran kolaboratif dan komponen penilaian pembelajaran kolaboratif. Tujuan utama model ini adalah untuk meningkatkan penyertaan pelajar dan penggunaan e-pembelajaran dan juga untuk meningkatkan penilaian pembelajaran kolaboratif. Komponen sosial termasuk Orang: iaitu pengajar, pelajar dan rakan usaha sama, Tingkah Laku tindakan orang itu iaitu Perkongsian, Bertukar dan Meneroka dan Persekitaran yang merupakan teknologi e-pembelajaran. Sementara itu, proses pembelajaran kerjasama SPM adalah berdasarkan model pembelajaran kolaboratif berorientasikan tugasan. Di samping itu, penilaian pembelajaran kerjasama untuk pelajar adalah analisis log yang merangkumi sikap pelajar dan tahap penyertaan mereka. Model ini mampu menjana hasil kemajuan kerja, peratusan penyertaan (individu dan berkumpulan) dan juga sikap pelajar dalam e-pembelajaran (pasif dan aktif). Model ini disahkan dengan menggunakan kaedah pengesahan pakar di mana pakar-pakar bersetuju bahawa model itu boleh digunapakai, difahami dan dapat mengenal pasti penglibatan pelajar.

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATION

CICT   Center for Information and Communication and Technology

CTL   Center of Teaching and Learning

HTML   Hypertext Markup Language

ICT   Information Communication and Technology

K   Kappa Value

SNA   Social Network Analysis

SPM   Student Participation Model

LIST OF SYMBOLS

i	Student
x	Number of student's hit
y	Total ratio student

LIST OF APPENDICES

CHAPTER 1

INTRODUCTION

1.1   Overview

Currently, the need of internet based in learning is undeniable. As rapidly technology changes, education in Malaysia also need to review their methods of learning. The Malaysian government speaks loud about e-learning (Rahman, 2006). Information and Communication Technology (ICT) infrastructure in schools and higher institution have been developed and improved. In October 2011, the Ministry of Education has launched a comprehensive review of the Malaysian education system.

The National Education Philosophy for Malaysia, enshrines the Ministry's and Government's vision of education as a mean for the holistic development of all children: intellectually, spiritually, emotionally, and physically. Generally the Malaysian National Education Philosophy is focusing on student's individual to create them to be intellectual, spiritual, emotional and physically knowledgeable and competent. The philosophy also stressed on the ability of students in achieving high level personal capability by contributing a betterment in society which make them to be collaborated among nations. It is one of the vital learning processes to be gained in their education system.

In the 21st century, education is focusing on developing student's learning skills by using ICT in their learning process. ICT in the study place could empower students in different location to create knowledge and work together (Frydenberg and Andone, 2011).

ICT also has been practiced through a e-learning technology as medium of learning in Malaysia starting the year 2000.

ICT in educational field facilitated access to learning, real time communication and learning become fun in their ways. Example of ICT supported learning is through web learning. Munguatosha *et al.* (2011) mentioned that ICT also is benefit to improve interaction, better access to resources, reduce operating costs and reliable communication among user. The existing ICT that supported learning system are: WebCT, Scholar360, Blackboard and also Moodle. They also mentioned that current ICT-supported learning system is towards the collaborative, open, online, and interactive learning which enable sharing knowledge and content.

Nicholas and Anderson (2005) also mentioned that ICT provides new opportunity for education institutions to enhance the classroom based method of integrating the social learning method into traditional approaches. Social learning theories can enrich learning by supporting collaboration, personalization, information sharing, common interest, group work support and also active participation. The system also called as collaborative web-based due the capability of social learning concept.

Collaborative environment is essential to provide users of the rich learning environment and to achieve the learning target. Collaboration is a philosophy of interaction and personal lifestyle where each individual learner is responsible for his/her actions, including learning and respects the abilities and contribution of his/her peers (Panitz, 1999). Collaborative learning approach is applied from childhood class to the upper higher level of learning; university classroom – to teaching and assessing students. Current learning style which uses technology and social media in learning environment make collaborative learning become very important.

One of the current technologies for learning purpose is e-learning. E-learning is the automate system for teaching and learning. This system currently being practiced in many institutions and involved many students to engage in the learning process. E-learning can encourage student to improve their knowledge so that student will keep high quality on job

as well as give positive impact to the institution and the environment (Dublin, 2008). E-learning is a learning space where enable students to explore and expand the knowledge without any boundaries. It creates a learning platform without limitation of space and time.

Previous e-learning systems were based on content and instructional method that delivered on computer; CD-ROM, intranet or internet. These systems focused on the skills and knowledge of the students in computer-aided platform (Clark, 2008). Nevertheless, this system is not suitable to complete the needs of technology web for learning. Current e-learning is introduced with the compliments from social media tools and social learning concepts.

An analysis is important towards students to identify student's performance and achievements. The effective of teaching and learning skills by instructors is measured by students result and outcomes of the learning (Gokhale, 1994). There are many methods of identify students outcome; exam result, student's performance, student's class grading and many more. Speedy (2014) has listed the generic skills for graduate level which are communication skills, teamwork skills, problem solving skills, technology skills, learning skills and many more. Its expected to be achieved by the graduate students.

1.2   Research Background

Generally e-learning has opened a new world in learning system which enable the knowledge to be transferred without limited to time and place. E-learning become the most popular platform used by many institutions around the world to encourage and motivate students to learn without boundaries. However e-learning application becomes a passive platform for learners and not interactive so that students do not use learning process effectively (Bowman, 2007).

It has been argued that e-learning does not fully utilize the two way communication which encourages student's participation and feedback (Noor *et al.* 2008). Research found

that most lecturers use e-learning to deliver materials and the students actively upload and view the learning materials; not use as truly learning process. These practices are not a good indicator of a commitment and contribution to e-learning (Puteh, 2010). In order to stimulate and enrich the learning process, social learning is applicable.

Currently the e-learning systems have embedded social learning tools once the web 2.0 technology being introduced. These tools help the users to implement social learning activities as the potential to complement, enhance and add new collaborative dimension in learning (Fu ad Dong, 2012, Parker and Chao, 2007).

Social learning is the way where the students share and increase their knowledge as well as encourage students to be active in learning process. It can be supported by working collaboratively in learning environment. Collaboration is the mutual engagement of students in e-learning community to solve a problem together. The collaborative learning tools available in current e-learning system are Forum, Wiki, Message And Chat (Mansur *et al.*, 2011). These tools can improve the usage of e-learning which encourage students to work collaboratively in learning process. However, Octaviani *et al.*, (2013) reported that there is very low participation on Forum, Chat, Message and Wiki.

Wiki is a collaborative tool that collects and organizes content, create and revise by its user (Petterson, 2009). In Wiki environment, students could share and discuss their project ideas. Generally Wiki is a collection of web paged created by HTML which allow users to modify, add, edit and delete content (Vassila, 2008, Parker and Chao, 2007, and Stone, 2009).

Wiki becomes a tool for collaborating authors as well as a source of information and knowledge (Parker and Chao, 2007) and become remarkable tools in collaborating learning (West and West, 2009). Even though e-learning is equipped with collaborative elements, Rodrigues *et al.* (2010) reported that main problems in e-learning is the lack of ability to stimulate student's participation which has been continued until the end of the course.

Based on Ceasar *et al.* (2007) research on collaboration practice and process especially in computer aided learning is difficult. It is hard to measure collaboration for a number of reasons, stated as follows:

    i.   Collaborative learning technologies must go beyond generic groupware application, and even the basic technology is not yet well developed.

    ii.   Collaborative computed learning is difficult to assess because it must be used by groups, not individuals.

    iii.   Collaborative interaction measurement based on system tend to lose the collaborative content

    iv.   To be effective collaborative learning depends on subtle social factors and pedagogical structure, not just simple tasks and technologies.

It can be concluded from the problems listed above, collaborative learning must occur from group participation in the learning process. Yet the collaboration assessment is always lose to the collaborative content which tend to measure the collaborative interaction. In addition, collaborative processes have to include the pedagogy effort to ensure the learning process is in the learning context. Moreover, social features can be used to motivate students and group learners to get engaged and participating the learning process.

There are many techniques to measure students in collaborating learning nowadays, and the most popular is Social Network Analysis (SNA). Another technique to measure student collaboration activities is log file analysis techniques. The technique has been used by most researcher in order to identify students contribution in social learning tools; Wiki, forum and blog (Cesar *et al.*, 2002; Strijbos and Fisher, 2007; Ruth *et al.*, 2005, Kepp and Schorr, 2009; Gafner *et al.*, 2003 and Kimmerle *et al.*, 2011).

Assessment in collaboration can be measure from the student attitude in the e-learning process that use social media tool such as forum (Trentin, 2008). The student attitude are captured in log file where by it can be used for collaboration analysis. The log data need to be analysed in order to assess student participation. Current processes of log analysis technique are analyzing the student's participation by looking on the activity hits.

However, there is no work on log analysis technique that look into the details of student's interaction.

Participation in collaborative learning lead to the better understanding, increase skills, increase learning contribution and also led to the positive changes in life (Bigman, 2000). It also promises gaining of information and achieving learning goals. Full participation is a key of engagement and enjoyment of students (Knight, 2004) while failure to participate in learning practice led to the existing of weak student/participant (Marsh *et al.* 2002).

Collaborative learning has positively give impact towards the learning outcome and increases the level of learning. There are some skills that effect towards the students and one of the skill is generic skills. Generic skills is referred to the employability skills, transferable skills, core skills, essential skills, soft skills, core compentencies skills and the critical enabling skills (Mohamad *et al.* 2011).

1.3   Problem Statements

The problems raise in this research are the student's participation and usage in e-learning is low, the interactions among them are very poor in learning process, and the assessment technique for group participation of each student is not fair and tend to be biased.

These are five research questions in this study:

  i.   What are the potential e-learning tools that enable interactions among students in learning process and increase e-learning usage?
 ii.   What is the approach to increase and motivate student's participation in the learning process?
iii.   What are the assessment technique to evaluate student's group participation?

iv.   How to design a model that able to increase student's participation, e-learning usage and improve group participation assessment?

v.   What is the analysis that should be done in order to measure the effectiveness of the proposed model?

1.4   Research Objectives

The aim of this research is to increase the student's participation and the usage of e-learning as well as to improve the collaborative learning assessment.

The objectives that support the main aim in this study are listed as follows:

i.   To investigate e-learning tools and the collaborative learning approach that able to increase student's participations and e-learning usage, as well as to improve the assessment technique.

ii.   To propose a Student Participation Model that promotes collaborative learning and group assessment that able to increase the e-learning usage.

iii.   To validate the model using experts validation and log analysis technique.

1.5   Research Scope

The research scope is focused on the statements below:

i.   E-learning Moodle 2.3 UTM is used as a learning platform for class activities.

ii.   Two collaborative learning Wiki projects are applied in e-learning class activities (namely: knowledge construction and contextual application).

    iii.   This research also focus on log analysis method to to measure student's participation in e-learning.

    iv.   Two classes are used as main participants which are SCJ4553 (Computational Intelligence) and SCSJ2154 (Object Oriented Programming).

1.6   Significance Of The Study

This study has some important benefits towards the social computer concept and also in education concept. By providing new methods to identify student's attitude is the one alternative for instructors and lectures in measuring students in learning environments. The process become shorter and use less of energy. The proposed technique also is improved in terms of the usage. The technique is added to become a tool that recognized student's interaction.

The proposed model is useful to guide the instructors who uses e-learning tools to design effective courses by following the proposed model. Morover, the students are able to create the collaborative learning environment by exploring the Wiki tool in e-learning Moodle.

1.7   Research Flow Guidelines

This research flow acts as a guideline for the author to conduct the research. This study is basic focus on education context which is learning. The participation of e-learning issue in education context bring towards the use of social learning environment in learning process. In social learning environment the need of collaborative environment is very important to make the learning process is meaningful. One of the meaningful characteristic is collaborative. In collaborative learning, the issue is to highlight is the analysis technique. There are many techniques available to evaluate student's performance: Social Network

Analysis (SNA), log data analysis and content analysis. In order to identify the participation of student, log data analysis is applicable. The log data file is generated by the system and saved using Microsoft Access software. By applying some calculation technique, the student interaction in participation is identified. The conceptual research framework is shown in Figure 1.1.

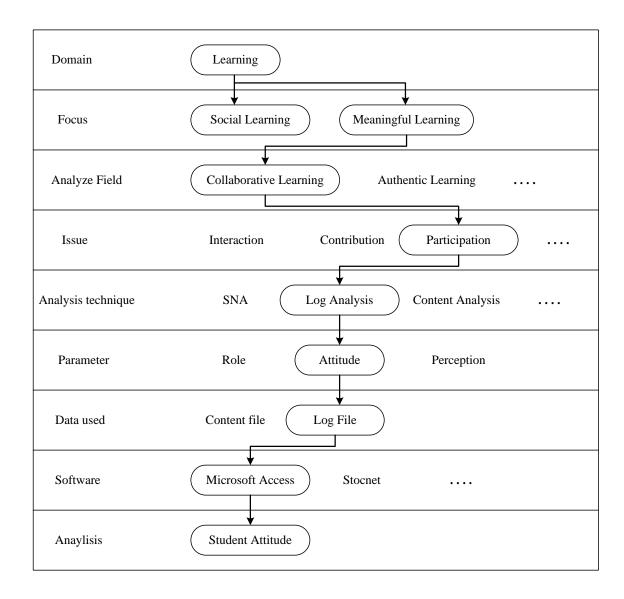**Figure 1.1**   Model of Conceptual Research Framework

1.8   Thesis Organization

Chapter 2 contains the literature review covered for this study. Chapter 3 discusses the methodology involves in this study. Chapter 4 give the implementation phase for this study. Chapter 5 explains the validation and analysis and finally Chapter 6 drawn the conclusion followed by recommendation and limitation.

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