Online Cooperative Learning for Communication and Team Working Skills Enhancement

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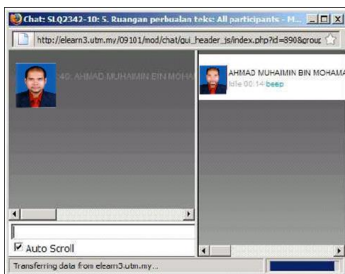*Corresponding author: amuhaimin3@live.utm.my

Graphical abstract

Abstract

Finding of literature review found that most of the social science graduates who are unemployed have a poor proficiency of communications and collaborative skills. These students can be helped to increase their proficiency through the learning process when studying at university level. Constructive learning environment with the implementation of cooperative learning strategy provides active learning experience to students and at the same time learning the subject. The learning structure based on group investigation along with the support of learning management system (LMS) that aims to improve the effectiveness of learning and communications and collaborative skills enhancement. The implementations of online learning are enhanced with guidance from the principles of online learning. The interactive tools of learning management systems and other applications are provided to the needs of students in learning activities. This article also discusses some of the website print screen which supports the process of interaction and communication of the implementation the cooperative learning.

Keywords: Active learning; cooperative learning; group investigation method; learning management system; principles of online learning

Abstrak

Tinjauan mendapati sebahagian besar graduan Sains Sosial yang menganggur mempunyai kelemahan penguasaan kemahiran komunikasi dan kerjasama kumpulan. Para pelajar ini boleh dibantu meningkatkan penguasaan kemahiran berkaitan menerusi proses pembelajaran ketika mengikuti pengajian peringkat universiti. Persekitaran pembelajaran konstruktif dengan pelaksanaan mengikut strategi pembelajaran koperatif menyediakan pengalaman pembelajaran aktif kepada pelajar dan pada masa yang sama mempelajari subjek. Struktur pembelajaran mengikut kaedah penyiasatan kumpulan dengan sokongan menggunakan sistem pengurusan pembelajaran berasaskan laman web bertujuan meningkatkan keberkesanan proses pembelajaran dan peningkatan kemahiran komunikasi dan kerjasama kumpulan. Pelaksanaan pembelajaran atas talian dimantapkan dengan panduan dari prinsip pembelajaran atas talian. Alatan interaksi sistem pengurusan pembelajaran serta beberapa aplikasi sokongan disediakan dan disesuaikan dengan keperluan aktiviti pembelajaran pelajar. Artikel juga membincangkan beberapa paparan dari laman web yang dibangunkan bertujuan menyokong proses interaksi dan komunikasi pelaksanaan pembelajaran koperatif.

Kata kunci: Pembelajaran aktif; pembelajaran koperatif; kaedah penyiasatan kumpulan; sistem pengurusan pembelajaran; prinsip pembelajaran atas talian

∎1.0 INTRODUCTION

The National Education Philosophy (Falsafah Pendidikan Kebangsaan) states that the nation's education efforts continuously strive to develop the individual potential from all aspects especially contribution to the national growth. The efforts on education also cover all educational activities in Malaysia including higher learning (Ministry of Higher Education, KPTM, 2006). Success in exams is not the real indicators of the success of education, but instead the question to be asked is whether the education process that the students go through, can be applied to real life in the future (Thompson, 2006) Similarly, academic excellence does not fully guarantee that the graduate will obtain his dream job, as the current circumstance of employment does not depend solely on academic excellence (Mohd. Salleh Abu *et al*., 2008). The employment sector plays a critical role in efforts to develop the nation, which requires

good sources of manpower having qualities such as being highly knowledgeable, highly skilled, and has mastery over information and communication technology.

However, some graduates of both public and private higher education institutions are less successful in entering the employment market that matches their field of study at university level. A study has found that several factors are closely related to this predicament.

1.2 Problems Background

The Department of Statistics Malaysia's (2010) revealed that the unemployment rate of graduates, including diploma and degree holders as well as postgraduates, from both private and public institutes of higher education, whether local or foreign; as being in the range of 3.16% to 4.15% between the years of 2002 to 2009.

Graduate's Tracer Study carried out by the National Higher Education Research Institute (IPPTN, 2004), Malaysia Ministry of Higher Education (KPTM, 2009), Nasruddin Mohamad (2004), and Department of Statistics (2010) found that the majority of unemployed graduates are graduates from the social science field, such as literature and humanities study. Reviews have found that amongst the main factors of this unemployment problem are:

i.   A total of 60,000 graduates are unemployed due to insufficient demand from the employment market (Syuhada Choo Abdullah, 2009).

ii. A total of 15,000 graduates registered as unemployed under the Graduate Training Scheme have stated that the lack of job market demand for their disciplines of study, and weakness in mastery of job skills (Department of Statistics, Malaysia, 2003; Nasruddin Mohamad, 2004).

iii. A total of 24,608 graduates were classified as unemployed, while 36,642 only secured temporary postings due to lack of experience, weakness in English, and unsuitable field of study (Results of collaboration study conducted by KPTM, Ministry of Human Resources, and National Economic Action Council, 2006).

iv. Graduate's Tracer Study (2006), six months post-graduation, had found that 30.7% graduates to be unemployed with several factors identified such as ill-matched jobs, lack of self-confidence, and personal issues (Hassan Said, 2006).

v.   Graduate's Tracer Study of public and private higher education institutions from the field of Social Sciences and Science, carried out over 3,025 graduates from the year 2001 to 2004, found that a total of 2,485 graduates were declared as unemployed. Among the factors identified were a lack of mastery of skills especially communication and unsuitability of field of study (Universiti Malaya, 2006).

The issue of unemployment amongst graduates is viewed seriously by the government as various speculations had arisen such as the weakness of local graduates and inability of the public institutes of higher education to compete with the private colleges in producing quality graduates (Nasruddin Mohamad, 2004). Hence various related efforts must be implemented to reduce this issue.

1.3 Problems Statement and Proposed Solution

Based on discussions, it can be summarized that among the country's education objectives is to develop the nation by providing manpower that is equally balanced from the aspects of physical, emotional, spiritual and intellectual. However, some of graduates fail to enter the job market due to various factors, with the main factor being the failure to master job related skills. Many solutions were proposed such as:

i.   The process of teaching and learning at university level being the best approach to help students improve their skills as required, and subsequently reduce graduate unemployment problems (Higher Education Strategic Plan Malaysia, KPTM, 2010).

ii. The current learning curriculum must be enhanced in line with the job market current situation (response of Mohamed Khaled Nordin (2009) to the graduate unemployment index by KPTM 2006-2008).

iii. Varying the resource, materials, and training for lecturers to help increase their efficacy of the application the soft skills in the process of teaching and learning (Radin Umar Radin Sohadi *et al.*, 2006).

iv. Employability skills can be improved when the learning environment takes into account the real employment situations, such as using real problems (Cotton, 1993).

v.   Social concept of learning such as cooperative learning has been identified as being able to improve students' general skills (Wan Azlinda Wan Mohamed and Mime Azrina Jaafar, 2009).

Based on the proposed solutions, the pedagogical aspect of education, instructional design, and the advantages of information and communication technology (ICT) can be used to assist students to improve their skills of communication and team working, while undergoing the process of learning.

The Soft Skills Development Module for Malaysia Higher Education (Radin Umar Radin Sohadi *et al.*, 2006) states that efforts to increase skills amongst students can be carried out through integration with the learning process during university education. The implementation requires a method that is systematic, planned and proven to be effective. This means the strategy and methods of study can be used as a guide on the implementation of a learning method which will assist students to increase their skills without neglecting their academic requirements. According to Prince (2004), Maharam Mamat, Johari Talib, and Maznah Ibrahim (2009) active learning is identified as being able to help improve skills amongst students. .

As an example, a constructive learning environment (Jonassen, 1998) provides the necessary characteristics for an environment of active learning (Bhavani Sridharan and Kinshuk, 2003). Amongst the methods of learning that fulfil the meaning of active learning here is cooperative learning. Many studies showed the effectiveness of cooperative learning at tertiary level (Felder and Brent, 1994). For the purpose of putting in place the implementation of cooperative learning, various methods can be used including group investigation method (Sharan and Sharan, 1994) which provides the proposed structure of cooperative learning activities. Technological support such as web-based learning management system can be used to help increase the effectiveness of cooperative learning.

Based on the above discussions, this article will discuss the design and development of cooperative learning, with the support of website interaction tools, to help students enhance their work related skills.

◼2.0 THEORITICAL FRAMEWORK

The theoretical development framework is based on the concept of active learning. The constructive learning environment (Jonassen, 1998) provides learning features that support active learning which are implemented to the learning development of this study. Elements of modelling, coaching and scaffolding are integrated as interactive support to achieve learning efficacy.

Learning is formed by taking into account five elements of cooperative learning (Johnson and Johnson, 1991; 1999), which are: positive interdependent, individual accountability, promotive interaction, social skills and group processing. Further, the group investigation method (Sharan and Sharan, 1994) is used as a structural guide for a learning that requires a high level of interaction and communication amongst students. In addition, this method is identified as the most effective in terms of cooperation

to complete assignments, in particular that which need a structured approach (Mitchell *et al.*, 2008).

Learning delivery which is based on the online learning concept (Salmon 2000: 2002), explaining how online learning should be delivered to students.

The instructional design model called Recursive, Reflective, Design and Development (R2D2) (Willis, 1995) is chosen as a system development guide and using Modular Object-Oriented Dynamic Learning Environment (Moodle) as learning management system. The three main phases of R2D2 ID Model used in the study are the define phase, design and development phase, and dissemination phase; covering all process of website development, from the definition phase to the phase of application of website in a real situation. Whereas the four principles of ID R2D2 Model, which are: repeating, reflection, random, and design involvement, are implemented at the process of website development.

In respect of the theory, strategy, method and principles of learning under discussion, the theoretical framework produced are intended to act as a guide to the development of online cooperative learning (see Figure 1).
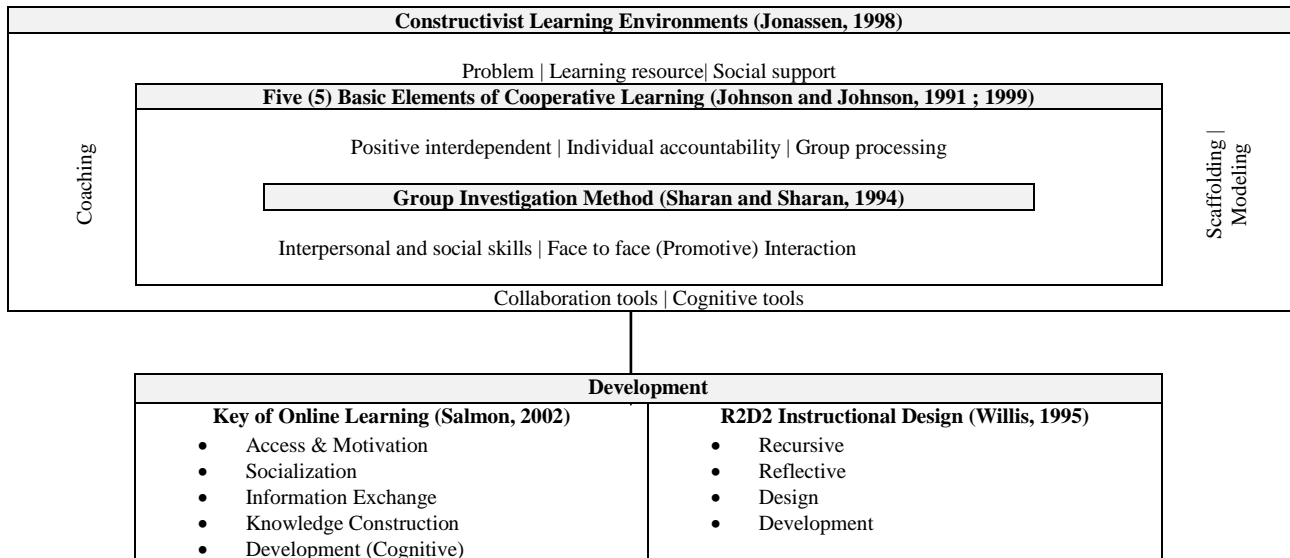

Figure 1 Theoritical framework of the study

1.3 Access Design of Learning Activities

Access to learning management system is shown in Figure 2.
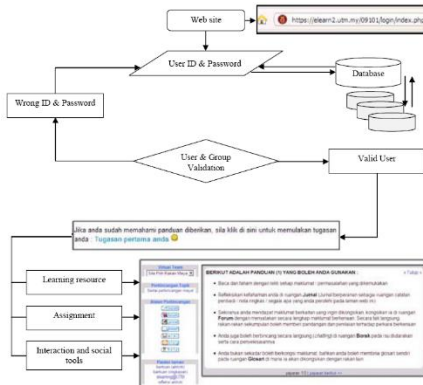

Figure 2 Structure of website

Figure 2 shows that each student is identified from the data base information and then placed into specific groups to receive assignments. The sequences of learning to be followed by students are discussed below:

i.   A virtual group with 3 to 4 people (Johnson & Johnson, 1991) is formed heterogeneously using built-in group functions in Moodle.
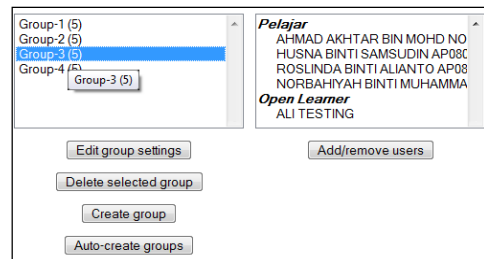

Figure 3 Group setting function in Moodle

ii. Each group receives different topics and assignments. Whereas, each student in the group will receive a different subtopic and assignment (see Figure 4).
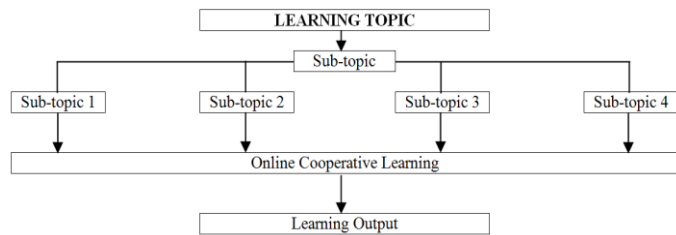
iii. The students then carry out the learning activities prepared based on the constructivist learning environment and cooperative learning. Table 1 shows the learning activity design provided.

iv. Even though each student receives different sub topics, the interactive tools enable them to collaborate in completing their assignments. Learning activities access (see Figure 2) consists of six main learning activities (see Table 2):

Figure 4 Sub-topic of discussion into group members

Table 1 Learning activity design

Constructivist Learning Environment		Cooperative Learning		Learning Activity	
i.	Problems	i.	Positive interdependence	i. ii. iii. iv.	Group setting Introduction into learning structure Distribution of topic Introduction into learning activity.
i. ii.	Learning resource Cognitive tools	i. ii.	Individual accountability Positive interdependence	i. ii. iii.	Getting and analysing information using information tools Preparing notes Social support
i. ii. iii.	Collaborative tools Cognitive tools Learning resource	i. ii. iii. iv.	Individual accountability Group processing Interpersonal and social skills Promotive interaction	i. ii. iii.	Social interaction (discussion and planning on assignment completion), Students are encouraged to discuss towards completion of assignment, Students motivate each other.
i. ii. iii.	Collaborative tools, Cognitive tools, Information source.	i. ii. iii. iv.	Positive interdependent Group processing Interpersonal and social skills Promotive interaction	i.	Share the information using interactive tools
i. ii.	Problems Collaborative tools	i. v.	Group processing Interpersonal and social skills	i. ii.	Learning reflection in personal journal columns. Students re-organize reflection in journals tool accordance with the assignment and the learning.

Table 2 Classification of learning activities

Classification	Learning activity
Commencement of Learning (Activity 1)	• Identifying and understanding process of learning • Division of /receiving of assignment
Finding and Reading Information (Activity 2)	• Introduction and understanding assignment • Finding and reading information • Reading forums and glossary sections • Reviewing assignments
Interaction (Activity 3)	• Interaction using chat tools
Information sharing (Activity 4)	• Commencement of discussion • Adding and updating index and glossary • Contribute writings to the forum discussions
Learning reflection (Activity 5)	• Answering self reflective questions • Editing/adding to journal • Reviewing the journal
Group assignment (Activity 6)	• Completing assignments using text editing and sharing tool

Table 2 shows the classification of online cooperative learning activity for this study. Figure 5 shows a learning activity structure in line with steps suggested by the group investigation methods (Sharan, 1994).
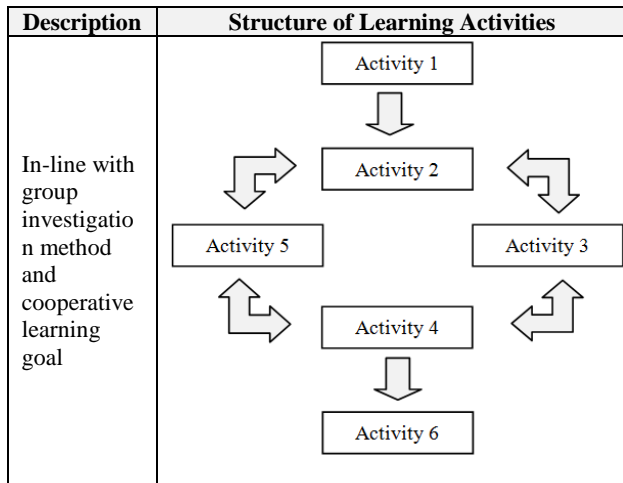
Description	Structure of Learning Activities
In-line with group investigation method and cooperative learning goal	

Figure 5 Structure of cooperative learning activities

2.2 Interaction Tools Design

Table 3 shows the principles used in the development of the learning.

Approach	Principle used
Constructive Learning Environment (Jonassen, 1998)	• Source of information • Social support • Collaborative tools • Cognitive tools
Cooperative Learning Element (Johnson and Johnson, 1991; 1999)	• Positive dependency • Individual accountability • Promotive interaction • Collaborative skills • Group processing
Group Investigation (Sharan and Sharan, 1994)	• Investigation • Interaction • Interpretation
Principles of Online Learning (Salmon, 2000; 2002)	• Sharing • Online access • Feedback

Amongst the important environmental factors of constructive learning (Jonassen, 1998) is social support and collaborative tools. For cooperative learning, interaction is the main element to drive the learning process. The interactive tools (see Figure 6) are provided as support to the learning process.

Figure 6 Interaction tools icon

2.2.1 Text Chat Tools

Chat tool (icon: "borak") supports the promotive interaction elements which will assist the group to complete the assignment, exchange information, group discussion, instant feedback, as well as help to build trust amongst each other. By way of adapting to cooperative learning, existing chat conversation tools in the Moodle learning management system was set according to the group access, as each group's study topic is different (see Figure 2 and 3). For example, Group A students did not disturb group B discussion. Among the benefits is that each text conversation can be recorded for the purpose of reference and review by the students or the lecturer.
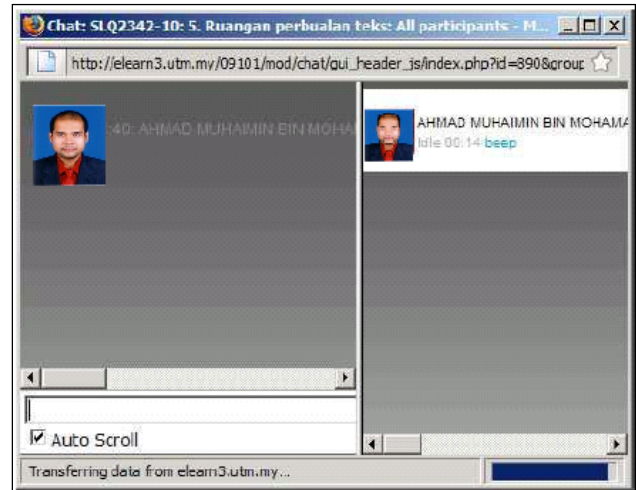

Figure 7 Text chatting tool displayed in a mini window (*pop-up menu*)

2.2.2 Forum Discussion

Online forum allows asynchronous discussions to take place, which allow students to share information such as documents, website address, multimedia file and another type of text conversations. Figure 8 shows an example of forum discussions using Moodle learning management system.

Figure 8 Forum discussion for group

2.2.3 Sharing Glossary of Terms

Text chats and forums allow students to discuss in a broader manner, whereas the glossary is provided as a space to share specific items, such as definition and index. This facility facilitates and accelerates students' reference to terms compared to discussions via text chats or via forums discussion.
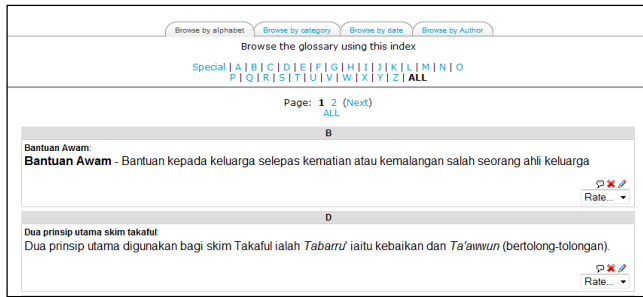
Figure 9 Sharing of specific terms in the glossary forum

2.2.4 Wikis

Wikis is provided to allow groups of students to work together to write, edit, adding, and erase texts in one article displayed. Each student has to complete his individual articles according to the subdivided topic assigned to him, to result in one finished article for the topic. The student is also allowed to edit each other's article in the group.
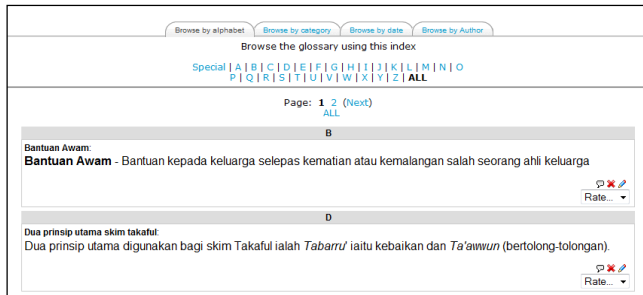

Figure 10 Wikis tools

2.2.5 Sharing Articles via Blogs

Blogs is provided for students to share writing assignments or information assessments with their friends outside the group (Figure 11). At the same time, this tool allows students to share the information across students and group.
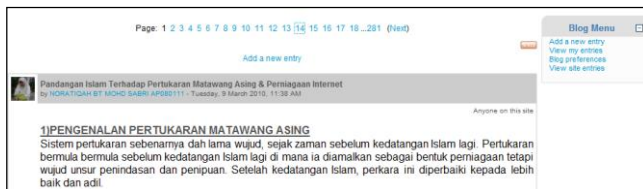

Figure 11 Blogs as article sharing

2.2.6 Personal Message Box

There is also the facility to send personal messages to members of the group, allowing messages of a more personal nature to be sent (Figure 12).

Figure 12 Personal message inbox

2.2.7 Search Engine Integration

Integrated search engine (using Google CSE apps) for search functions on specific topics results in focused search results and more relevant to the topic searched. Figure 13 shows the integrated search engine while Figure 14 shows the result screen.
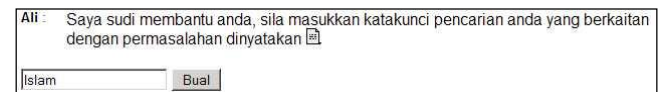

Figure 13 Integrated Search Engine

Figure 14 Search result of integrated search engine

■3.0 SUMMARY AND RECOMMENDATION

The active learning approach which was carried out using a strategy of cooperative learning has been identified as being able to assist students to improve their communication and group cooperation skills. The use of web based learning management system helps to enhance the efficacy of teaching and learning.

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