e-Collaborative Projects for Better Learning

Lim Kin Chew

Director of Learning and Knowledge Management, Dnium Pte Ltd
Chairman of Singapore's Learning Standards Technical Committee
Blk 20 Ayer Rajah Crescent
#08-03 Ayer Rajah Industrial Estate, Singapore 139964
lim.kinchew@dnium.com, kinchew@yahoo.com

Abstract

eLearning is now accepted worldwide. However, how can we extend the eLearning mode of learning to handle e-collaborative projects?

The purpose of this paper is to outline some practical and pedagogical approaches which can be used to introduce higher order thinking skills into students involved in e-collaborative projects.

This paper explains how pedagogies like those of constructivism, constructionism, social constructivism and that of being "connected and separate" will make the students ecollaborate better. For the teacher facilitator, the author recommends using WebQuests to specify the requirements of the e-collaborative projects. WebQuests are the appropriate "scaffolds" to use in order to get the students to be more inquiry and activity oriented.

Additionally, schools and training organisations can provide an encouraging and supportive physical and software environment for their students or trainees to work in. Schools can have a flexible project room layout with motivational pictures and "mix-and-match" furniture as well as up-to-date IT facilities. For the e-collaborative software environment, the author recommends using the Open Source Software based Sakai Project, which is becoming the preferred collaborative and learning environment in major universities in the USA.

The third area is in the assessment of the e-collaborative projects. This is where teachers can use rubrics to assess the student's performance in project work. Rubrics are increasingly being used in many universities abroad.

This paper highlights the necessity of using self, peer and teacher assessments on the student's behaviour and performance during the period of the project. In addition, the author recommends the use of some freely available self and peer assessment software toolkits to make it easier for e-collaborative project facilitators to assess student's performance.

Ultimately, through e-collaborative projects, we believe students will learn better. Teachers will have more time to facilitate and coach students during both online and face-to-face interactions rather than just giving out contents to students.

1. Introduction to eCollaboration

1.1 Background

eLearning, as in the use of technology for teaching and learning purposes, has been around in Singapore since the days when computers were introduced into the schools. However, the author feels that much of the

eLearning practices involve the uploading of digitised content materials to a learning management system. Very often, the students engage in self-paced, self-directed and individual learning using learning materials that are delivered over the Internet. There is also very little or no interactions with his or her fellow course mates. Learning is rather passive and is based on knowledge recall and comprehension.

On the other extreme, when students participate in project work, they find it better to meet, discuss and collaborate in face-to-face meetings. It is often in project work that students are engaged in higher-order thinking and learning skills such as analyzing and synthesizing data and finally evaluating situations. Unfortunately, there are few ICT-base application systems which allow students to engage in activities and also allow the teachers to assess the student's project work performance

The purpose of this paper is to outline some practical and pedagogical approaches which can be used to introduce higher order thinking skills into students involved in e-collaborative projects.

1.2 Pedagogical Approaches

In general, many teachers want their students to be able to have the following goals after their students complete a project work:

- Connect (with the real world)
- Collaborate (with like-minded people)
- Cooperate (with their team mates)
- Critique (other people's project)
- Conclude (summarise and conclude their ideas and plans)

Corresponding to the above goals are the following pedagogies:

- Self-directed learning
- Constructivism
- Constructionism
- Social constructivism
- Connected and separate

These pedagogies can best be realised in project work in the following three ways:

- Creating a conducive physical and project work friendly environment **(Facilities)**
- Introducing meaning project work activities for the students **(Activities)**
- Developing an assessment system which takes into account self, peer and teacher assessments of the student **(Assessment)**

2. e-Collaborative Project Work Details

2.1 Project Work Learning Environment

An important element which can contribute to better e-collaborative project work amongst the students is the physical environment where the students will be doing their project work. Students will feel much motivated if they can have the following physical project work room environment:

- Flexible furniture arrangement according to project groups (e.g. having colourful round tables with movable chairs)
- Colourful room with motivational pictures pinned up on the walls (e.g. pictures on Team Work, Leadership, Inspiration, Perseverance, Quality)
- Wireless Internet connectivity – students will be using Notebook PCs or even Tablet PCs for their work. Other wireless accessories are the wireless printer (bundled with photo-copier and scanner as well)

- Access to a Portal system where they can use collaborative software tools like wikis, blogs, shared directories, discussion forums, online pools, chat rooms, whiteboards, etc.

2.2 e-Collaborative Activities

The second item that needs to be tackled is the e-collaborative activities the teacher has to plan and introduce to the students.

Teachers can use WebQuests to provide the "scaffolding" for students to build up their knowledge of the world. The teacher will specify generally what the project is all about. He or she will also provide some initial guidance to get the students to define the project in more details. The teacher supervisor should avoid "spoon feeding" the students. In e-collaborative project work, the teacher should spend time thinking about how to assess the performance of the students.

2.3 WebQuests

A WebQuest is an inquiry-oriented activity in which most or all of the information used by learners is drawn from the Web. WebQuests are designed to:

- use learners' time well,
- focus on using information rather than looking for it, and
- support learners' thinking at the levels of
- analysis, synthesis and evaluation.

The model was developed in early 1995 at San Diego State University by Bernie Dodge with Tom March. WebQuests are now widely used and there are many good examples for teachers to use [1].

A WebQuest is a template with headings like Introduction, Task, Resources, Process, Evaluation and Conclusion.

By using WebQuests, teachers can spend more time to facilitate, to coach and to assess students properly. Students are expected to look for the information.

WebQuests can also be input online and reused by other teachers.

Table 1 – WebQuest for a Constructivism-based Project

Heading	Details
Introduction	Photo Blog on Recycling Efforts in Brunei
Task	Explain some recycling efforts in Brunei Discuss the effectiveness of the recycling efforts Offer suggestions on how other recycling efforts can be initiated Offer other insights into the whole issue of "recycling" (This is where teachers can spot whether there are interesting and novel suggestions from the students that are "out of the box".)
Resources	Portal System, digital camera, digital video, Tablet PCs, photo blogging software, etc
Process	Use appropriate technologies to document recycling efforts Document what you have discovered about the recycling efforts Discuss amongst yourselves the effectiveness of the recycling efforts
Evaluation	Rubrics for Excellent, Good, Average and Poor grades
Conclusion	Make some recommendations on how Brunei can move forward in recycling efforts

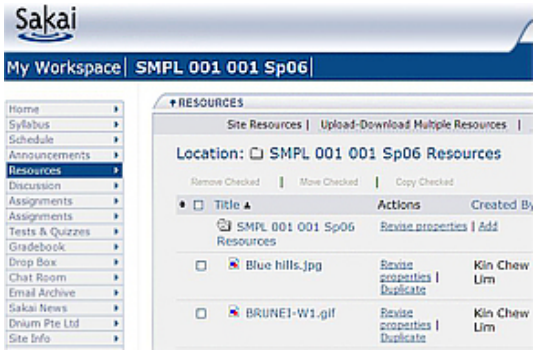

Figure 1 – Screenshot of Sakai LMS [2]

Once the students have been given the WebQuest, they can then organise themselves and start their project work. This is where an e-collaborative software system like the SakaiProject [Figure 1] comes in very handy. The SakaiProject software is ideal for e-collaborative project work as it has been developed as a collaborative and learning environment for education. It has many collaborative facilities like wikis, blogs, online chats, WebDAV facility, syllabus tool, discussion forums, student's dropbox, and discussion forums. Above all, it is developed using Open Source Software.

2.4 Assessment of e-Collaborative Projects

The assessment of the student's e-Collaborative Project is perhaps the most difficult part of the project. The teacher cannot give the usual eLearning multiple-choice type of questions to the students. The following are typical questions faced by teachers who have introduced e-collaborative projects to the students:

- How can teachers be consistent in their assessments of the students across different groups?
- How can teachers allow students some say in assessing themselves and their peers?

The author recommends that the assessment module be based on rubrics. A rubric is a set of instructions normally given out during course work or examination. For e-collaborative projects, the author suggests adopting one of the following models:

- Washington State University Critical Thinking Rubric [3]
- Self and Peer Assessment Resource Kit (SPARK) from the University of Technology Sydney [4]

Table 2 – Example of a set of rubrics

Category	10 – 9	8 - 6	5 - 2	1
Content	Covers topic in-depth with details and examples. Subject knowledge is excellent	Includes essential knowledge about the topic. Subject knowledge appears to be good.	Includes essential information about the topic but there are 1-2 factual errors	Content is minimal OR there are several factual errors
Mechanics	No misspellings or grammatical errors	Three or fewer misspellings and/or mechanical errors	Four misspellings and/or grammatical errors.	More than 4 errors in spelling or grammar.

Table 2 shows an example of a set of rubrics which can be used to assess the student's project work.

Table 3 – Teacher's assessment of group members

Efficient functioning of group	John Tan	Katie Sun	Seng Siew Chen	Koh Seng Song
Helping the group to function well as a team	0	3	3	1
Understanding what is required	2	3	2	1
Suggesting what is required	1	3	1	2
Level of enthusiasm & participation	2	4	2	2
Performing tasks efficiently	1	3	3	1
Organising the team & ensuring things get done	0	3	1	1

		Average rating for student ...			
	TEAM A	Andy	Belinda	Conrad	Denise
Scenario 1	Andy entries	2	2	2	2
Team effort	Belinda entries	2	2	2	2
	Conrad entries	2	2	2	2
	Denise entries	2	2	2	2
	Total	8	8	8	8
	SPA factor *	1.000	1.000	1.000	1.000
	Team mark	25	25	25	25
	Individual mark	25	25	25	25
	PASA factor **	1.000	1.000	1.000	1.000
	* SPA factor Andy = sqrt (8/(8+8+8+8)/4) = sqrt (8/8) = 1.000				
	** PASA factor Andy = sqrt ((2+2+2)/3)/2 = sqrt (2/2) = 1.000				

- Teacher Assessment (50%)

- **Final grades:**
  - Excellent (A) – 75% and above
  - Good (B) – 55% - 74%
  - Passable (C) – 45% - 54%
  - Poor (D) – 44% and below

- Overall Assessment should contribute 10% to student's performance in his overall assessment.

3. Conclusion

e-Collaborative projects involve people who can connect, cooperate, collaborate, critique and finally conclude their ideas and contributions. E-collaborative projects extend the scope of eLearning in three main ways:

- by providing a conducive and encouraging environment,
- by using templates like WebQuests and software systems like the Sakaiproject and the Liferay portal, and finally
- by using rubrics and other software to guide teachers in assessing students in project work.

With the help of assessment tools like SPARK, the teacher supervisor can provide student assessments in project work in a more objective manner.

4. References

[1] WebQuest: webquest.sdsu.edu

[2] Sakai: www.sakaiproject.org

[3] SPARK (Self and Peer Assessment Resource Kit) - www.educ.dab.uts.edu.au/darrall/spark site/

[4] The critical thinking rubric: wsuctproject.wsu.edu/ctr.htm