

Problem Based Learning using Mobile Technology

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Abstract

This article focuses on the introduction of wireless mobile technology for the collaborative group activities in problem based learning. In this study students have used Tablet PC to interact with each other and to collate the information for final presentation. This paper will discuss how introduction of the technology and embedding it in the curriculum enhances students' performance. Students and teachers feedback and reflection on the use of the technology has been considered for future improvement in the course. Future implementation of various other tools developed particularly for interactive use of Tablet PC will be critically evaluated.

Introduction of the Study

This study has been conducted in an undergraduate integrate curriculum: science and technology class where students are engaged in problem based learning for five weeks. Students may identify a problem scenario and develop their own problem statement or they may choose one of two scenarios given in the study guide. Students need to justify how their own problem statement will cover the aspects of the integrated curriculum.

Students work in collaborative groups of three. Students may choose their own group members or seek lecturer's help, if required. Students meet face to face with the lecturer and other classmates twice in a week. It depends entirely on the students if they wish to meet the instructor or other classmates during the class time; therefore, it is not compulsory for the students to be present in the class. Lecturer on the other hand make sure that he/she is available during the class time to respond to students queries, provide resources, provide equipments, facilitate learning sometimes by asking further questions, engaging them in discussion, motivating through challenges, providing alternative perspectives for the problem, guiding them in the right direction, etc.

Students go through different stages of collaborative and individual learning activities; and work towards the best solution for the problem into consideration as shown in Fig. 1 (Bhattacharya & Akahori, 1997). Students are required to give an interim report on their

progress after two weeks in PBL and finally submit a presentation after five weeks which include all the activities, thinking log and self reflection and evaluation of the PBL process.

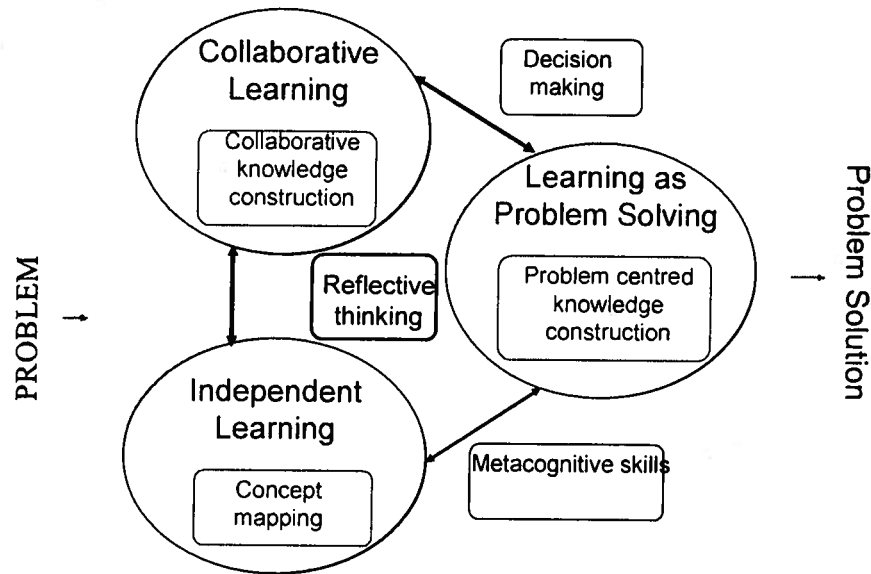


Figure 1: Model for Problem Based Learning

Wireless Mobile Technology for PBL

In the present study we have used Tablet PC as a device for the students to interact, develop collaborative concept maps, collate information from different sources (search engines, electronic library, etc.), record discussion and create thinking log. The basic features of problem based learning such as information exchange, discussion, decision making, critical thinking, etc have been facilitated by the use of the mobile technology.

Students work in collaborative groups and get to know each others progress seamlessly by using Tablet PC (wireless mobile technology). Students can work individually on part of the project and send information across to other members of the group as and when they want. It was very convenient for the students to record the events on Tablet PC using the writing and recording features which they can then refer to in their self reflection.

We have received feedback from both teacher and the students about the usefulness of Tablet PC for the facilitation of the PBL process. Teacher in the course kept a blog of all activities, observations, thinking and events of learning and frustration with the technology.

Embedding Technology in the Curriculum

It is important to embed the use of the technology in the curriculum for its success. It should not be an add-on. It should not require too much work from the teacher to implement the technology in the classroom and beyond. Technology should facilitate learning in PBL without causing hindrance or increasing workload for the learners. Keeping all these into consideration we have identified the PBL activities to introduce Tablet PC in the Integrated Curriculum: Science and Technology course. We have not redesigned the course but rather identified the activities where Tablet PC would enhance students learning in PBL.

We have conducted a training session for the students who volunteered to participate in the project. Students were allowed to use the Tablet PC as long as they wanted to make feel comfortable with the technology before they started on the PBL activities.

At the end of the semester students were asked to fill out a survey on their experience in using Tablet PC for activities in PBL.

Feedback on the use of Tablet PC

The feedback questionnaire had items on the use of the Tablet PC for collaborative group activities, use of different features of Tablet PC and software for collating and representing information and ideas. Some of the students' feedbacks on their use of Tablet PC for collaborative activities are as follows:

We were able to immediately show representations of our ideas, and the work was more shared by having the tablet there with us there was not one person who had to return home and type it up. We were also able to use all three tablets at the same time, so we could get through work quicker by designating jobs.

The pc helped because we didn't have to crowd around it, one person could draw on the pc and then swivel it round to show the others. Drawing ideas was much easier on the pc as was putting ideas in context because we could draw our slide to scale on the pictures of the actual area and see which was best.

Future considerations

In our future studies we will try to minimize student's dissatisfaction within the scope of this project. Following are some of the consideration for future implementation of the project:

- More rigorous training and practical hands on activities relevant to the curriculum using Tablet PC.
- Design pre-PBL activities to use Tablet PC. This will reduce the time spent in dealing with the technology in the actual learning event.
- Lone Tablet PCs to the students for the entire duration of the PBL assignment.
- Ensure students are able to exchange data with their group members.
- Install special software available for Tablet PC in addition to those already installed.
- Provide technical support whenever required.
- Increase teacher's use of the technology in order to motivate students and to demonstrate various possibilities.

Reference

Bhattacharya, M., & Akahori, K. (1997). Design of A Computer Supported Problem Based Learning System based on the Cognitive Strategies for Problem Solving, International Conference on Cognitive Science, Seoul, Korea, pp. 309-310, August, '97.

Acknowledgement

This study has been conducted under the HP Technology for Teaching Grant 2007.