Improved Collaborative Learning using Touch Screen

Iwan Tjhin
Faculty of Business and IT
Whitireia New Zealand
Wineera Drive, Porirua 5022,
New Zealand
iwan.tjhin@whitireia.ac.nz

ABSTRACT

This paper describes how to achieve improved collaborative learning through an upgraded computer system for learners of a drawings-related course. It introduces the use of touch-screens for learners to participate better in discussions involving drawings and charts. Coupled with a suitable software application, learners can collaborate better in discussions, producing ideas and answers more quickly and easily, and receive feedback more rapidly. It results in an increase in overall learners' participation rate.

Keywords

Touch screen, collaborative learning process, study process, study forum, rapid feedback

1. INTRODUCTION

In the collaborative learning process, learners are encouraged to participate in discussions, offer ideas and answers for topics discussed in classroom. It is, however, challenging to include all learners' ideas and answers within the time constraint of classroom session, particularly in a larger class where topics involve drawings, charts and notes. Using conventional computers, it is unlikely to get all learners to quickly and easily produce ideas and answers, for other learners to then respond. An upgraded computer system can provide improvement to the overall collaborative learning process, to facilitate better participation and more rapid feedback from learners. By using appropriate tools, all learners can quickly and easily take part in discussions that may involve creation or alteration of drawings, charts, and notes.

2. METHODOLOGY

Possible improvement of the collaborative learning process is effected through observation of learners' responses and participation in a redesigned lab computer system and process flow.

3. SYSTEM DESIGN

The primary special computer hardware required for this collaborative learning process is a touch-capable monitor (often referred to as a touch screen) with stylus. The software application can be any compatible drawing-capable software. Although tablet PCs may be more convenient, they cost more and are less available in computer labs. A system design for collaborative learning using touch screen with stylus is shown in Figure 1.
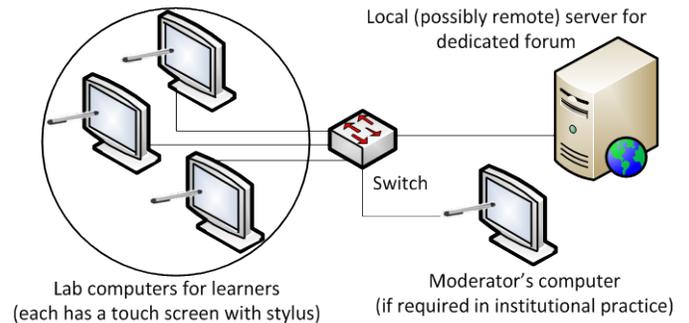
Figure 1: **System design for collaborative learning using touch screen.**

4. IMPROVED COLLABORATIVE LEARNING PROCESS

Each learner in the classroom has access to a lab computer attached to a touch screen. Using stylus, learners are able to draw charts, diagrams and write notes quickly and easily. The charts, diagrams and notes produced are then saved in compatible picture file format and shared (uploaded) to a dedicated forum as replies to questions posted by other learners. Learners are able to quickly view, compare and comment on the posted replies in the learning environment. Rapid feedback can be provided to each learner's posting.

This is more effective and interactive when compared to conventional collaborative learning processes where learners would use conventional computers to produce ideas and answers, which involve drawings, charts, and notes, for all other learners to view and comment. Such conventional methods have limitations on the number of learners that can participate within acceptable classroom discussion time.

The improved collaborative learning process flow making use of touch screen is shown in Figure 2 below.

Figure 2: **Improved collaborative learning process flow using touch screen.**

5. RESULTS

Participation and motivation rates from learners increase significantly. Most learners are able to contribute ideas and answers in classroom learning. Learners appear more involved and motivated. It sometimes introduces added noise from learners' direct discussion activities; in particular among those sitting in closer proximity, but it does not produce a noticeable distraction.

6. CONCLUSION

Learners' participation in the collaborative learning process can be improved via introduction of an upgraded computer system. Through use of touch screen, more learners are able to contribute ideas and answers for topics posted by other learners within time constrained classroom study. Feedback can be provided to learners more rapidly. Overall learners' participation and motivation rates improve.

7. REFERENCES

Albinsson, P., & Zhai, S. (2003). High precision touch screen interaction. *Proceedings of the SIGCHI conference on Human factors in computing systems*, New York: ACM.

Maxwell, J. (2005). Qualitative Research Design: An Interactive Approach (2nd ed.). Thousand Oaks, CA: Sage.

Yager, R.R. (1990). A model of participatory learning. *IEEE Transactions on Systems, Man and Cybernetics* 20(5), 1129-1234