Collaborative Learning in Engineering Education: A Grounded Theory Analysis of a CSCL Application

Michelle J. Boese
University of Missouri at Rolla, mjbvz6@umr.edu

Hong Sheng
University of Missouri at Rolla, hsheng@umr.edu

Richard Hall
University of Missouri at Rolla, rhall@umr.edu

Follow this and additional works at: http://aisel.aisnet.org/sighci2007

Recommended Citation
http://aisel.aisnet.org/sighci2007/2

This material is brought to you by the Special Interest Group on Human-Computer Interaction at AIS Electronic Library (AISeL). It has been accepted for inclusion in SIGHCI 2007 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.
Collaborative Learning in Engineering Education: A Grounded Theory Analysis of a CSCL Application

Michelle J. Boese  
University of Missouri at Rolla  
mjbvz6@umr.edu

Hong Sheng, Ph. D.  
University of Missouri at Rolla  
hsheng@umr.edu

Richard Hall, Ph. D.  
University of Missouri at Rolla  
rhall@umr.edu

ABSTRACT

This study examines how students collaborate on engineering problems and the effect of information technology on facilitating collaboration. Twenty-eight undergraduate engineering students were placed in small groups to discuss questions about mechanics of materials, either face-to-face or via a keyboard chat. Students were interviewed after completing the tasks, and the interviews were analyzed using the grounded theory approach. The resulting framework suggests that social goals as well as achievement goals are major motivations for students’ behavior in the team situation, and that technology and group characteristics were acknowledged to influence their actions during and after the cooperation.

Keywords

Computer supported collaborative learning, grounded theory, virtual teams, visualization.

INTRODUCTION

Engineers in industry increasingly work in teams to solve problems synergistically (Felder and Brent 2005); thus, collaborative learning technologies contribute importantly to engineering education (Wankat and Oreovicz, 1993). This study examines an information technology which facilitates collaboration by engineering students. The research questions are four-fold: 1) what motivations elicit collaborative learning; 2) how do students collaborate to solve engineering problems; 3) what are the outcomes of collaborative learning; and 4) what technology features facilitate collaboration and learning.

METHODOLOGY

28 students (average age: 22) were offered extra credit in a required engineering course. Students included 18 seniors, 8 juniors, and 2 sophomores, with 9 female. Five groups (2-3 students) used 3-D interactive applets of problems from the course, discussing them from different rooms via a built-in instant messaging service. Five face-to-face groups discussed printed diagrams. Interviews were made about the collaborations, then transcribed and analyzed. The poster shows the open and axial coding of a grounded theory approach, developing a theory based in qualitative data (Strauss and Corbin, 1998).

RESEARCH RESULTS:

REFERENCES