

## Chapter 3.23

# Utilizing Web Tools for Computer–Mediated Communication to Enhance Team–Based Learning

**Elizabeth Avery Gomez**

*New Jersey Institute of Technology, USA*

**Dezhi Wu**

*Southern Utah University, USA*

**Katia Passerini**

*New Jersey Institute of Technology, USA*

**Michael Bieber**

*New Jersey Institute of Technology, USA*

### ABSTRACT

Team-based learning is an active learning instructional strategy used in the traditional face-to-face classroom. Web-based computer-mediated communication (CMC) tools complement the face-to-face classroom and enable active learning between face-to-face class times. This article presents the results from pilot assessments of computer-supported team-based learning. The authors utilized pedagogical approaches grounded in collaborative

learning techniques, such as team-based learning, and extended these techniques to a Web-based environment through the use of computer-mediated communications tools (discussion Web-boards). This approach was examined through field studies in the course of two semesters at a US public technological university. The findings indicate that the perceptions of team learning experience such as perceived motivation, enjoyment, and learning in such a Web-based CMC environment are higher than in traditional face-to-face courses.

In addition, our results show that perceived team members' contributions impact individual learning experiences. Overall, Web-based CMC tools are found to effectively facilitate team interactions and achieve higher-level learning.

## **INTRODUCTION**

Instructors of both traditional face-to-face and online classrooms seek active learning techniques that engage the learners. The increased use of Web-based computer-mediated communications (CMC) as support tools that supplement the face-to-face classroom ("blended learning") and enable active learning between face-to-face class times fit this quest. CMC is regarded as an efficient computer support tool to facilitate student participation (Phillips & Santoro, 1989). Prior research (Wu & Hiltz, 2004) reports that adding asynchronous online discussions through CMC platforms enhances students' learning quality in a face-to-face class setting. Although various Web-based computer-mediated communications learning strategies have been applied in the field (e.g., online collaborative learning), limited research focuses on computer-supported team-based learning in a face-to-face classroom. Team-based learning (TBL) is an instructional strategy that promotes active learning in small groups that form a team over time (Michaelsen, Fink, & Knight, 2002).

Our goal is to assess the impact of team-based learning when introduced in a face-to-face classroom that utilizes Web-based CMC as a supplemental learning tool between classes, thus increasing team interaction across the semester. A Web-based computer-mediated communications tool called WebBoard™ was utilized in our computer-supported team-based learning research to facilitate team learning activities and communication. This paper describes results from this experience. The paper begins with a literature review building on constructivist

learning, collaborative learning, small group learning, and Bloom's taxonomy theories. It then provides examples of the Web-based interface and pedagogical implementation, introducing a model for assessing computer-supported team-based learning. Research questions, hypotheses, and data analysis results are presented. Finally, the limitations of the study and future research efforts are discussed.

We believe that our contribution is two-fold. First, we describe an approach for transferring a grounded pedagogical approach to a Web-based environment by supplementing the experiences from a face-to-face classroom. Second, we document preliminary assessment results that support the feasibility and effectiveness of the proposed approach. This discussion should be of interest to educators and researchers in expanding the use of current Web-based learning management systems with a structured modular approach through the integrated use of discussion forums to achieve higher-order team learning outcomes.

## **THEORETICAL BACKGROUND**

### **Constructivist Learning Theory**

Leidner and Jarvenpaa (1995) classify learning models and discuss their relevance and impact in information systems educational approaches. The broadest categories of this classification are objectivism and constructivism. Objectivism posits that learning occurs in response to an external stimulus. Learners respond to the stimulus by modifying their behaviors. This model assumes that abstract representations of reality and knowledge exist independently from the learners. Teaching consists of transferring knowledge from the expert to the learner. Opposite to objectivism, constructivism posits that learning is not a process of knowledge assimilation, but an active process of constructing individual mental models, in which knowledge is created

14 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:  
[www.igi-global.com/chapter/utilizing-web-tools-computer-mediated/22320](http://www.igi-global.com/chapter/utilizing-web-tools-computer-mediated/22320)

## Related Content

---

### Exploring Gender Differences in Attitudes Toward Software Piracy Among Undergraduate Students in a Developing Country

Ali Acilarand Muzaffer Aydemir (2012). *International Journal of Information Communication Technologies and Human Development* (pp. 1-9).

[www.irma-international.org/article/exploring-gender-differences-attitudes-toward/74058](http://www.irma-international.org/article/exploring-gender-differences-attitudes-toward/74058)

### Global Information Ethics: The Importance of Being Environmentally Earnest

Luciano Floridi (2007). *International Journal of Technology and Human Interaction* (pp. 1-11).

[www.irma-international.org/article/global-information-ethics/2903](http://www.irma-international.org/article/global-information-ethics/2903)

### A Qualitative Study in user's Information-Seeking Behaviors on Web Sites: A User-Centered Approach to Web Site Development

Napawan Sawasdichai (2007). *Human Computer Interaction Research in Web Design and Evaluation* (pp. 42-77).

[www.irma-international.org/chapter/qualitative-study-user-information-seeking/22223](http://www.irma-international.org/chapter/qualitative-study-user-information-seeking/22223)

### Information Technology and the Development of a Global Safety Culture: A Nuclear Perspective

Susan L. Rothwell (2011). *Handbook of Research on Culturally-Aware Information Technology: Perspectives and Models* (pp. 558-581).

[www.irma-international.org/chapter/information-technology-development-global-safety/45060](http://www.irma-international.org/chapter/information-technology-development-global-safety/45060)

### Pervasive and Grid Computing Merging

Loreno Oliveira, Emerson Loureiro, Hyggo Almeidaand Angelo Perkusich (2009). *Human Computer Interaction: Concepts, Methodologies, Tools, and Applications* (pp. 254-261).

[www.irma-international.org/chapter/pervasive-grid-computing-merging/22253](http://www.irma-international.org/chapter/pervasive-grid-computing-merging/22253)