

## Chapter 10

# Laboratory Experiments in CSCL Activities

**César A. Collazos**

*Universidad del Cauca, Colombia*

**Luis A. Guerrero**

*Universidad de Costa Rica, Costa Rica*

**Jose A. Pino**

*Universidad de Chile, Chile*

**Flavia M. Santoro**

*Universidad do Rio de Janeiro, Brazil*

**Marcos Borges**

*Universidade Federal do Rio de Janeiro, Brazil*

**Neide dos Santos**

*Universidad do Estado do Rio de Janeiro, Brazil*

**Sergio Zapata**

*Universidad Nacional de San Juan, Argentina*

**Wilson Sarmiento**

*Universidad Militar Nueva Granada, Colombia*

### ABSTRACT

*Several groupware tools have been implemented within Computer Supported Collaborative Learning (CSCL) research groups in order to test ideas and concepts currently being studied. It is very important to perform pilot-evaluations with these systems. The CSCW Lab is an environment for evaluating groupware within research groups. Four dimensions in assessing groupware were identified: context, collaboration, usability, and cultural impacts. In this chapter, the authors present a proposal to detail the collaboration level, specifically for CSCL domain applications. Understanding and analyzing the collaborative learning process requires a fine-grained sequential analysis of the group interaction in the context of learning goals. Several researchers in the area of cooperative work take as success criterion the quality of the group outcome. Nevertheless, recent findings are giving more importance to the quality of the “cooperation process” itself. The proposed model includes a set of guidelines to evaluate the usage of CSCL tools within a collaboration process defined along with the learning objectives. The authors have defined an experiment with a software tool instrumented to gather information that allowed them to verify the presence of a set of cooperation indicators, which in turn helped to determine the quality of the work process.*

## 1. INTRODUCTION

Several groupware tools have been implemented within Computer-Supported Cooperative Work (CSCW) and Computer-Supported Collaborative Learning (CSCL) research groups in order to test ideas and concepts currently being studied. It is very important to perform pilot-evaluations with these software tools. Yet the evaluations must be done following some methodology so that the results make sense and can be used to enhance the research. The demand for groupware evaluation can be observed by the number of papers and research reports addressing this issue and by the recent workshops totally to this theme (Knutilla, Steves, & Allen, 2000; Steves & Allen, 2001; Pinelle & Gutwin, 2000).

The CSCW Lab is an environment for evaluating research products. The main goals are to guide groupware researchers in establishing a method for designing and conducting their evaluations and to be a repository of groupware evaluation knowledge. It intends to study existing methodologies applied to groupware evaluation as well as to define new methods, instruments, and/or tools. An ontology that comprises the concepts related to groupware evaluation was defined and four main dimensions were identified: context, usability, collaboration, and cultural impacts (Araujo, Santoro, & Borges, 2002).

Besides the dimensions, there are issues related to specific groupware domain applications that should be considered when designing an evaluation process. Therefore, since the CSCW Lab is a general environment, it is necessary both to analyze particular domains and specialize each of the four dimensions. They will be combined defining and applying appropriate methods.

One of the dimensions in assessing groupware is the level of collaboration that the group achieves while working with the software support. In this chapter, we present a proposal to detail the collaboration level of the CSCW Lab specifically for the CSCL domain applications. The model includes a set of guidelines to evaluate the usage

of a CSCL tool within a collaboration process defined along with the learning objectives.

The rest of the chapter is divided into nine more sections: Section 2 describes the CSCW Lab, which is the context of our work; Section 3 presents the proposal for the collaboration dimension. In Section 4, we present the stages of cooperative learning process. Sections 5 and 6 present the metrics and indicators proposed. Section 7 shows the software tool developed to validate the model. In Sections 8 and 9, the experiment and the results are described. Finally, we give some conclusions and further work in Section 10.

## 2. THE CSCW LAB

The CSCW Lab is a laboratory for conducting groupware pilot evaluations. Besides the physical space, it includes guidelines and instruments for executing groupware evaluations. Groupware evaluation involves a great amount of effort. The planning, design, accomplishment, and replication of an evaluation are costly activities (Ramage, 1999). The design of the experiment is an activity that should be carefully performed in order to guarantee that the results and measures obtained are relevant for interpretation.

The CSCW Lab is also a repository of information about groupware evaluations. The aim of this repository is to collect information about evaluations design, their results, and interpretations. Browsing this repository, evaluators can find guidelines for planning their own evaluations. Data of past evaluations could be used to compare against their own evaluation.

The strategy chosen to build this repository or knowledge base was to define and populate an ontology (Araujo, Santoro, & Borges, 2002). The dimensions in the CSCW Lab ontology are the core elements, associated with the other common concepts that exist in evaluations in general: instruments, data, products, results interpretations, and so forth (Figure 1).

17 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/laboratory-experiments-cscl-activities/70248](http://www.igi-global.com/chapter/laboratory-experiments-cscl-activities/70248)

## Related Content

---

### A Systematic Design Model for Gamified Learning Environments: GELD Model

Tugce Aldemir, Amine Hatun Ataand Berkan Celik (2019). *Design, Motivation, and Frameworks in Game-Based Learning* (pp. 30-56).

[www.irma-international.org/chapter/a-systematic-design-model-for-gamified-learning-environments/208020](http://www.irma-international.org/chapter/a-systematic-design-model-for-gamified-learning-environments/208020)

### Gamification and Smart Feedback: Experiences with a Primary School Level Math App

Michael D. Kickmeier-Rust, Eva C. Hillemannand Dietrich Albert (2015). *Gamification: Concepts, Methodologies, Tools, and Applications* (pp. 970-982).

[www.irma-international.org/chapter/gamification-and-smart-feedback/126099](http://www.irma-international.org/chapter/gamification-and-smart-feedback/126099)

### Collaboratories and Virtual Safaris as Research in Virtual Learning Environments Scholarship

Jonathon Richter (2011). *International Journal of Gaming and Computer-Mediated Simulations* (pp. 94-96).

[www.irma-international.org/article/collaboratories-virtual-safaris-research-virtual/53158](http://www.irma-international.org/article/collaboratories-virtual-safaris-research-virtual/53158)

### The Effects of Fully and Partially In-Game Guidance on Players' Declarative and Procedural Knowledge With a Disaster Preparedness Serious Game

Ting Zhouand Christian S. Loh (2023). *Research Anthology on Game Design, Development, Usage, and Social Impact* (pp. 1818-1834).

[www.irma-international.org/chapter/the-effects-of-fully-and-partially-in-game-guidance-on-players-declarative-and-procedural-knowledge-with-a-disaster-preparedness-serious-game/315568](http://www.irma-international.org/chapter/the-effects-of-fully-and-partially-in-game-guidance-on-players-declarative-and-procedural-knowledge-with-a-disaster-preparedness-serious-game/315568)

### Playing with Biology: Making Medical Games that Appear Lifelike

Thomas B. Talbot (2013). *International Journal of Gaming and Computer-Mediated Simulations* (pp. 83-96).

[www.irma-international.org/article/playing-with-biology/93030](http://www.irma-international.org/article/playing-with-biology/93030)