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Studio Zone: Computer Support for Reflective Design

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Abstract: This poster will describe a study of Studio Zone, a web-based learning environment for supporting discussion around visual representations of design, with the goal of fostering critiquing skills. This approach features personal reflection spaces, portfolios, and cognitive scaffolds to support critique. This study presents a comparison of two contexts in which the Studio Zone environment will be integrated: a middle school art class and a graduate level class in educational software design.

Keywords: distributed learning environments, scaffolding, reflection

Introduction

This poster will describe a study of Studio Zone, a web-based learning environment for supporting discussion around visual representations of designed objects, such as painting, architecture, print advertisements, and computer interface designs. The goal of this research is to develop students' ability to create, reflect on, and critique art and design. It is expected that fostering reflection by making thinking visible and encouraging social interaction will be valuable for learning these skills. Three major features of the software support this approach: 1) personal spaces for recording progress on works and reflections, 2) prompts and guiding questions that give students strategies for assessing their own work and responding to the work of others, and 3) opportunities to present and respond to works. Since presenting work and accepting criticism can at times be daunting to students, Studio Zone attempts to foster a studio-like culture in which students feel comfortable and capable of giving feedback in a constructive and supportive way. This study presents a comparison of two contexts in which the Studio Zone environment will be integrated: a middle school art class and a graduate level class in educational software design.

Theoretical Framework

This research contributes to previous scholarship in educational technology by addressing the intersection of "cognitive apprenticeship" theory, computer-supported collaborative learning, and the model of the "design studio." The theory of "cognitive apprenticeship" (Collins, Brown, Newman, 1989) which emphasizes modeling, coaching, scaffolding, and fading of cognitive tasks, has been mostly applied in science education. For example, the Knowledge Integration Environment (KIE) (Linn, 1995), Computer Supported Intentional Learning Environments (CSILE) (Scardamalia & Bereiter, 1991), and the Progress Portfolio (Loh, et. al., 1998) all provide procedural and cognitive scaffolding to support the development of scientific inquiry skills. In various ways, these applications aim to help students become reflective *inquirers*; this research attempts to develop students as reflective *designers*. Thus, the design of Studio Zone draws heavily from these other tools but is distinguished by its focus on the special issues involved in learning design.

This study also places special emphasis on how computer-supported activities relate to the sociology of the class. In particular, the study aims to establish reflective practices that are characteristic of learning in "design studio" environments. The work of Donald Schön (1983, 1985) and David Williamson Shaffer (1999) describes aspects of reflection in architecture studios, and informs the approach underlying Studio Zone. In addition, the research of Mark Guzdial and others (Guzdial & Kehoe, 1998; Hübscher & Puntembakar, et. al., 1997) who have developed technologies to support design learning has influenced aspects of the software design. Thus, this research will contribute to understanding the process of moving toward a design studio model of learning, and the role technology may play in that change.

Methods

The design of Studio Zone aims to improve students' cognitive skills related to design. At the same time, it also aims to facilitate certain practices that are conducive to developing those skills, such as participating in group critiques and seeking help from more skilled peers. To evaluate the effectiveness of these aims, this study focuses on three elements: change in individual students' skills, changes in the classroom culture, and the effectiveness of Studio Zone's design features. Since Studio Zone will be piloted for the first time in this investigation, we expect that certain features will need to be added, revised, or removed as the study progresses. We also expect that the

process of integrating the software into the established norms of the classroom culture will be a slow one. Therefore, this study will incorporate a combination of quantitative and qualitative methods to answer the following research questions: 1) How do features of Studio Zone help foster reflective practices in a design learning context?, and 2) How does the Studio Zone learning environment impact students' design and critiquing ability?

Subjects

Two learning contexts will be studied, a middle school art class and a graduate level course on educational software design. The researcher will work with the instructors of each of these courses and coordinate class activities with Studio Zone. Each of these courses lasts about 13 weeks.

Data Sources

A pre and post questionnaire will be administered to assess students' prior design experiences and practices as well as perceptions of their ability to design, critique, and reflect. Student activity using Studio Zone will also be collected through logfiles, posted images, and posted writing. To understand the social context and the process of integrating Studio Zone into these classes, both classes will be observed and interviews will also be conducted with the instructors and students.

Results

Through comparison of two classes using Studio Zone, this analysis will assess how reflection and discussion around designed objects can be supported with technology. Trends of student activity in Studio Zone will be analyzed in relation to reported assessments of design skills. The process of integrating the technology tool will also be analyzed and discussed in terms of their implications for incorporating Studio Zone into other learning contexts. It is expected that certain characteristics of the class cultures will impact how Studio Zone is used as a tool for learning.

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