Roles and Issues of Computational Media in Learning Communities

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Driven by the Internet revolution and the demand for computer literacy skills, computational media are playing an increasing role in education from pre-school through lifelong learning. Adaptation of existing technologies and design of new digital document technologies should be undertaken with an understanding of the role these technologies can play in the affective, cognitive, and social processes of learning, and with sensitivity to the subculture of the communities expected to adopt them.

The mini-track focusing on Roles and Issues of Computational Media in Learning Communities came about because of a growing interest at HICSS in the use of digital documents technologies in various kinds of learning institutions. That interest crystallized at HICSS 32 with a workshop entitled “Digital Documents in Education” convened by a team of digital document researchers and educators. This was a multi-level dialogue in which communication was enhanced by a group support system installation.

The record provided by the group support system conversation suggested a significant interest among the workshop participants in pursuing learning and teaching issues related to the use of digital document technologies. The most persistent topics related to the roles of digital document technologies in educational settings included

- changing the structure and delivery of education;
- information and knowledge acquisition;
- the development of critical thinking skills;
- addressing different learning styles and difficulties;
- ethics of use; and
- cognitive, social and political costs.

The papers for the inaugural year of the mini-track address many of these topics as they are expressed in two kinds of learning communities: pre-kindergarten through eighth grade and university settings. In all four papers, both the teacher and the students are considered, as well as the general tenor of the learning environment.

Learning contexts: Multimedia issues in physics education by Yvonne Waern, Patric Dahlquist and Robert Ramberg addresses contexts that influence students’ reasoning and learning through a case study of university-level physics students of varying ages. Digital technology provided a vehicle for students to interact with the subject matter.

The Role of Usability on the Implementation of Educational Technology by Paula Bourges-Waldegg, Luis Moreno and Teresa Rojano offers a pilot study on the impact of usability and interface design of educational technology on learning and teaching mathematics and science. The case study, conducted in secondary schools in Mexico, describes the technology activities of students and teachers and indicates usability problems that surfaced. The study also addresses the value of usability as an influence on education indicators that determine educational policies, goals and curricula.

Structured Study Groups Empower Student Learning: I Cannot Write My Final Until My Class Finishes Creating its Multimedia Text by Brian P. Coppola describes the added value of enabling a group of University of Michigan honors chemistry students to create multimedia “study materials” as a means of preparing for a final exam. Students engaged in reciprocal teaching activities among themselves in which multimedia computation tools expanded their understanding and command of the subject matter.

Digital Technology and learning Design in a K-8 Learning Community: Planning for New Tools and New Learning by Linda Glen Dembo, Mark C. Hale and Robert O. Briggs is based on a case study of one school as it changed and expanded its commitment to digital document technologies. The paper addresses the process of making digital technology organic to the institution and the efficacy issues encountered.