The Influence of Medium and Task in Student Communication Patterns

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Technologies that fall under the rubric of computer-mediated communication consist of a diverse array of electronic tools. Each of these tools has the power to amplify or reduce different elements of human interaction (Bowers, 1988), thereby influencing the collaborative process. Jonassen (1995) recommends using a variety of CMC media to support multiple facets of meaningful knowledge construction.

This poster presents an analysis of communication patterns of a class of 22 students, mainly seniors and graduate students, interacting within two CMC environments. The first is an electronic bulletin board to which students could post comments about readings or class discussions over the course of the semester. The second environment is a synchronous chat session. Students in a lab received one of four handouts that designated them as members of a particular electronic discussion group. Each group had to discuss a certain issue and give a presentation, as a group, to the entire class later that day. The members of each group used pseudonyms, so they were unaware of the identities of those with whom they were interacting.

Focus Question: How do interactions within a semi-structured, asynchronous CMC environment differ from those that take place in a task-oriented, synchronous one, and how does this shape the collaborative process?

The data analysis charts the communication patterns which characterize the two technologies, such as the rates of idea generation, interpersonal responsiveness and conflict. The dynamism of the chat sessions encouraged questions, disagreements and interdependence, emphasizing the social nature of knowledge construction. The lack of temporal stresses and the long-term commitment associated with the bulletin board allowed for reflective articulation of ideas and responses. This study is part of an ongoing research project investigating effective methods for teaching about technology with technology.

References

Bowers, C.A. (1988). The Cultural Dimensions of Educational Computing: Understanding the non-neutrality of technology. New York: Teacher's College Press.

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Supporting collaborative learning in work practice transformation

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Research problem

Numerous studies of work in process industry has been conducted, describing the nature of process operator work and consequences of automation. In general, process control automation makes operator knowledge more abstract and can potentially hamper development of the operators ability to handle emergency situations. In this research project the nature of change in work practices caused by automation at a chemical industry is studied, and possibilities for overcoming negative effects of automation with computer-supported collaborative workplace learning are explored. A computer support for collaborative workplace learning is being developed and studied in use. In particular the evaluation will focus on how it can support collaborative reconstruction of operator work practice, and dissemination of work knowledge within and across work shifts.

Research site

The study is carried out at a division of a large chemical industry in Sweden producing liquid chemical products, where a computer-based process control system is being implemented. In emergency situations (e.g. power failure or loss of air pressure) the process operators switch to manual operation to bring running processes to a stable state, and failure in doing so can result in severe environmental and material damage. The manual work has earlier been characterized by craftlike skills, and learning through apprenticeship.

From preliminary observations and interviews with 11 of the 14 operators it seems clear that automating process control at the Chemitech factory will substantially change the preconditions for developing abilities to handle emergency situations, and these abilities may slowly erode in the long run. Most operators perceive a need for improving their abilities to handle emergencies, and in particular situations demanding manual operation. This include better knowledge of appropriate actions as well as a better sense of orientation in the manual control system. Also, the observations and interviews have revealed that operator knowledge is largely collective and heterogeneous. In problem situations operators often rely on experience from other workers on the shift, and problems are often solved in collaboration within the shift. In reconstructing operator work practice it becomes important to bring together the experience from the different shifts to develop the best work practice under the new working conditions. The reconstruction is therefore a collaborative process where each operators´ individual experience is brought into play.