The Internet-based Shared Environment for Expeditions

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Abstract: This poster session presents an internet-based learning and support system designed to support the key elements and processes of a problem solving expedition. In addition, we briefly describe lessons learned from a pilot in the spring of 1999, and how those lessons have influenced the implementation of a second pilot in the fall of 1999.

Keywords: computer-mediated communication, distributed learning environments, informal learning environments, scaffolding

The Internet-based Shared Environment for Expeditions (iExpeditions) project is both an effort to develop and implement an innovative collaborative learning environment and a design experiment to build new knowledge about internet-based learning systems. IExpeditions has been designed for youth taking on and learning from authentic projects, and is a partnership of the Center for Technology Innovation in Education (CTIE), University of Missouri, Columbia, and Motorola, Inc. and includes collaboration with educators at Brigham Young University. An expedition is a metaphor for participant's involvement in a team problem-solving activity. iExpeditions is an internet-based extension of a successful face to face program offered for a number of years by Motorola University for children of Motorola employees. In the face to face experiences the youth spend a week with other youth and mentors and take on an authentic problem of Motorola. Examples of the type of problems the youth have taken on include how best to sell pagers in China or how to implement a communication system in the Olympic village. These camp-like experiences have been highly effective in engaging the youth in problem solving experiences. Can this high level of engagement and productivity be achieved and sustained through an internet-based system? What design of system features and implementation strategies will best promote teamwork and problem solving activity? Moving to an Internet-based system brings many challenges, including technical requirements of the home computing environments, training to use the system, loss of face to face interpersonal contact, and the loss of a focussed time period. The possibility of an internet-based system, however, offers substantial advantages including the potential of expeditions at anytime during the year (not just summer camp), inclusion of youth who do not live close to the camp sites, and engagement of youth from around the world in collaborative teams.

For the two pilots of iExpeditions the participants have been challenged to come up with solutions for how to design, develop and market telematics. Telematics is wireless communications designed for the car providing drivers with personalized information, messaging, entertainment and location-specific travel and security services. The expedition lasts for a number of weeks (six to eight) and includes the formation of a team, coming to grips with the challenge, gathering data, identifying possible solutions, developing solutions, and reporting and evaluating solutions. The youth aged 12 to 17 are divided into teams of 5 and provided with a mentor. The mentors role is to encourage and support the youth as they undertake the expedition. The youth also have technical support help for any problems they encounter with the iExpeditions system, as well as direct access to telematics experts who work for Motorola. The key elements of scaffolding within iExpedions are (1) a visual space that represents the team, the work process, and resources for doing the work (see figure 1), (2) representation tools for richly mediating and sharing work and experience of the participants, and (3) a variety of communication tools (synchronous and asynchronous) and methods that allow the team flexibility in how they work and communicate.
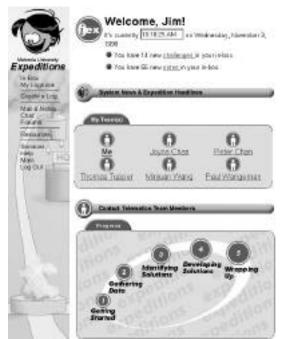
Figure 1. Home screen for tools, team and process.

The first pilot study undertaken in the Spring of 1999 showed participation levels of youth and team functioning to be critical elements of an expedition. The study also suggested that certain attributes of the youth, such as experience with technology, personal agency, and learning style, were associated with higher levels of participation. The data were also suggestive that certain contextual features influence participation and team functioning. The contextual features of note were the technology system available to the youth, the practices of the mentor, and parent expectations for the participation. Additionally our implementation of the first pilot sought to scaffold the process of problem solving and working as a team by providing a step-by-step process for the youth. In hindsight we believe that the step-by-step process was overly prescriptive for a number of reasons. First it meant that the youth had to stay in sequence and stay up to speed. It was hard to catch up once an individual or team fell behind. This problem was complicated by the numerous technical challenges for the youth and mentors to learn and effectively use the system. Youth who had trouble with their home system quickly fell behind and had trouble rejoining the process. Second, the highly specified process seemed too much like schoolwork and did not seem authentic to how real employees at Motorola solve problems.

As a result of these lessons from the first pilot the second pilot was designed to be more fluid so that youth could jump ahead or return to more basic steps as needed and desired by the team. More responsibility was assumed by the mentor for providing guidance and structure for the process. In addition greater efforts were made to support the initiation process both for the youth to gain familiarity with the iExpedtions system and the community of users. For example, while we thought we had provided sufficient information and guides to using the technology, the type and number of technical problems overwhelmed the materials and processes prepared for the first pilot. For the second pilot substantially improved materials and greater amounts of training for the mentors were provided. On the social side, the first pilot had placed the youth in teams and attempted to get them engaged with the telematics challenge on day one of the expedition. In the second pilot we have implemented a more socially engaging start-up process that includes building and sharing of profiles and having a set of open chat sessions as a means to get to know the mentors and other youth before the teams are formed.