A Laboratory Experience for Teaching Participatory Design in a Human-Computer Interaction Course

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The ability of computer technology to improve productivity and enhance quality of life rests squarely on how well the technology application fits our conceptual understanding of how things work [1]. Left to their own devices, computer programmers take a "systems-centered point of view", concerned about "how the software works and what parts of it do what" [1, p. 217-218]. While it is important for a software product to provide the necessary functionality to perform its intended use, it is also important that this functionality be presented in a manner consistent with the user's understanding.

In the area of Human-Computer Interaction (HCI) research, a number of approaches have evolved to meet this challenge. Though they differ in techniques, each find ways to interject the designer in the user's world and the user in the designer's world in order to develop a shared conceptual model of the task and the context in which it is being done [2]. This poster will focus on the development of a curriculum for a HCI course that uses a practical, experiential learning environment for this important aspect of software design. In particular, the poster will spotlight the inclusion of a long-term design project with volunteer users and the creation of a low cost lab to support team design activities and user interaction.

The HCI course is structured around the steps in the Contextual Design approach [3]: user interviewing & observation, data modeling & model consolidation, brainstorming, paper prototyping, and usability testing. Contextual design relies on ethnographic techniques from anthropology [2, 4, 5, 6, 7]. Ethnography is a method of research in which the researcher gathers data within a natural setting. Throughout the contextual design process, members of a design team engage in activities requiring the same skills used by ethnographic researchers [4].

Two aspects of the redesigned curriculum for the HCI course have focused on students' development of these skills. First, materials and exercises that focus on observation, interview and data interpretation skills are now part of the course. Second, students in the course have the opportunity to use these skills with real potential users of their term long design project. The HCI course solicits potential software users from the introductory computer science courses in an approach similar to the way upper division psychology courses on empirical methods are taught by soliciting voluntary subjects from lower division courses. The use of these volunteers provides members of the design team with data from potential users to develop, validate, and refine their designs.

A low cost lab was developed to support team design activities and user interaction. The lab is a split room configuration with a Design Team "War Room" and a User Interaction Room.

The Design War Room is intended for team design and brainstorming sessions. The Design War Room has 3 writing walls and 1 pin-up wall. Teams use a **"working-on-the-wall"** approach to meetings (See Figure 1). This allows everyone to visualize what is being done, allows everyone to easily contribute, and it drives a shared understanding. The User Interaction Room is intended for design teams to interact with users through interviewing, paper prototype testing, and usability testing (See Figure 2). The poster will provide a guide to creating a lab environment and insights gained using the lab as part of the course.

The revised HCI curriculum with the inclusion of ethnographic techniques and the use of the HCI laboratory has increased students' understanding and appreciation of participatory design. In the words of two different students, "this course has made me look at my job in new ways." Over the two semesters of this study, each group completed all stages of the conceptual design process to successfully design a product based on user input. Based on preliminary results of studying long-term attitudes toward design, the approach taken in the revised HCI course seems particularly successful in raising student awareness of the importance of the user as a partner in the design process.

Figure 1: Students "Working-on-the-wall"   Figure 2: User Interaction Room

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