Building a Room of Our Own: The Cooperative Design of Web-based Group Project Support for an Educational Community

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ABSTRACT

This paper reports on a system development project to facilitate group work in an educational setting. Our main goal was to create a prototype of a web-based collaboration tool to support student project teams. We also sought to explore the relevance of participatory design methodology in an educational community setting and to reflect on learning and applying participatory design methods. We found that while participatory design methods are applicable to this context, they needed to be adapted to address the particular needs and motivations of a large, diverse user group, with a high turnover in membership. We worked with a small surrogate group, focusing on fostering a mutually rewarding relationship with these users. Our position as both designers and users also offered an opportunity to reflect on the challenges and advantages that the merging of these roles can bring to participatory design.

Keywords

Case study, group work, web-based collaboration tool, educational setting, PD and education

INTRODUCTION

As participatory design approaches become more widely accepted in the information systems design field, its principles and methods have been applied to a growing variety of situations. Designers have moved beyond the large industrial or public service organizations which formed the focus of the early projects [6] to explore how participatory design can be adapted to new settings. Recent projects report on the success of participatory design methodology in the context of small businesses [17], volunteer organizations [15], and community

development projects in developing nations [4, 13]. As they take participatory design beyond the traditional constituency, designers are re-evaluating and modifying the established methods in order to ensure that they meet the same goals in new settings.

In choosing the most appropriate mode of participation for a given project, it is useful to consider at least two salient aspects of the setting: the nature of the user population and the type of application developed. In most of the PD projects so far, including the recent ones just cited, the common pattern of user population and application type is fairly clear. Users are typically colleagues or co-workers in a single workplace. Ideally they form a small, tightly knit, and stable group who all know each other. The applications developed for these groups are generally one of a kind tools, carefully tailored to the specific needs of the specific users. In these situations, every member is generally involved in the development process and users' motivation for participation is fairly straightforward: they can anticipate a direct benefit from their involvement. At the opposite end of the population/application spectrum we can place the development of commercial software [11]. In this case, the user population is the mass consumer market, a large, diverse, isolated, anonymous collection of individuals with no connections to each other. The applications developed for this group are mass-produced "shrink-wrapped" generic software packages. In this context, participation in development is usually limited to randomly selected samples of users, brought together only for the duration of the focus group or similar exercise to act as temporary proxies for the larger population. Their motivation for participation is varied, but may include monetary incentives and curiosity.

While these two extremes of settings are clearly identifiable, the middle ground between them has been overlooked within the context of participatory design. We could characterize the user populations in such intermediate settings as 'communities of interest' – large,

loosely knit memberships, with some mutual knowledge and shared partial identity based on some common interests. The applications most appropriate for such communities are neither completely generic nor individually custom fit, but constitute a shared infrastructure with a common set of multi-purpose facilities applicable to a range of purposes. This kind of user group is fairly common, but the application of PD in this setting has not been well explored. We thus have little guidance on whom to approach among this group to participate in the design process, what may motivate them, and the nature of the methods and tools to engage them.

Our study addresses these questions by taking participatory design into such a context, a graduate faculty in a large metropolitan university. In many ways, this setting presented a fruitful place for participatory design. The students are the principal users of the computer system in the faculty, but they have historically had little direct input into its design. As our research was for Masters students and designed by Masters students we were in a novel position to explore a process controlled by insiders. Our techniques placed an emphasis on looking for solutions to problems "we" faced together in our everyday work rather than separating the designers from the users.

This paper follows the sequence of steps in the development of our project, from our initial investigations to a 'final' prototype. The first section addresses the background of the project, including a description of the site and our approach. A discussion of the methods we employed, the results we achieved with them, and an evaluation of our application and adaptation follows this. The paper closes with some reflections on applying participatory design in an unconventional setting, with designers who are also users, as well as thoughts on learning PD methods.

THE SITE
The Faculty of Information Studies (FIS)[1] is a small professional faculty at the University of Toronto, located in Toronto, Ontario. It offers both Master's and doctoral degrees, with the majority of the approximately 200 students enrolled in the Master of Information Studies program. Students in this program specialize in one of three streams: library and information science, archival science, or information systems. They complete a set of common core courses, as well as required courses for each stream and electives, for a total of 16 semester-length courses. Students may enroll in full or part-time

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[1] FIS homepage URL: http://www.fis.utoronto.ca/

studies and can take anywhere from two to six years to complete their degree.

Appropriate to the increasingly interdisciplinary faculty, the Master's student population is a heterogeneous one. They have wide range of academic backgrounds, holding undergraduate and graduate degrees in the humanities, social sciences, 'hard' sciences, and other areas. Many students also have extensive work experience in the information field or other professions. Consequently, the computer literacy and skills of incoming students vary widely. Further to this, students are at all stages of life, with many juggling full-time work and family commitments along with their studies. While most of the FIS population lives in the greater Toronto area, a significant number commute from other locations in Southern Ontario, meaning that some students spend limited time on campus.

The use of computer technology is vital to many aspects of work in the faculty. FIS prides itself on being on the leading edge of education in the information field and sees an understanding of information technology as critical part of career preparation. As a result, students make extensive use of the computing resources in their course work. These resources include one large lab running on a Windows NT network, 2 smaller labs running on a Novell network, both with a variety of software applications

APPROACH
We began this project with varied experience in information systems design and participatory approaches. One member of the design team had extensive knowledge of systems design, while another had previous experience in community development, both of which proved to be an asset to our project. We were all new to the participatory design methodology for information systems, however, and we approached the project with the understanding that the best way to learn it was to try it. We began our project, guided by the principles set out at the first Participatory Design Conference in 1990 [7]:

- Computers should enhance user's skills rather than degrade or rationalize them.

- Users are in the best position to determine how to improve their work and life, and systems should be designed with the full participation of users.

- Users' perceptions of technology and feelings about it are as important as its specifications or capacities.

- Computer systems must be considered within the context of use.

Greenbaum's [10] view of participatory design as a strategy to give people a means to influence their

environment was particularly important to us as students in our faculty do not generally have a significant role in the decisions related to the systems they use. To ensure that we addressed this lack of access to and control over resources for computing systems we discussed our own experience as student users and reviewed previous student papers on participatory design projects at FIS. This laid the groundwork for our research before we went out to consult with systems staff and complete a literature review.

In planning the project, we considered the major PD methods. In order to develop a systematic and complete understanding of the context, we planned interviews with students and observations of their work practices. We also considered activities to help users generate ideas about what they wanted. Although our notions of what we needed and what was possible changed as we progressed, we considered envisionment exercises such as the future workshop technique and mock up exercises as important steps. After this, we planned to take the results of these activities to develop prototypes to be iteratively critiqued and modified by users.

LEARNING ABOUT THE USE SITUATION

Information Gathering
As students in the faculty, we were in a unique position at the beginning of the design process. We already had first-hand experience of the institutional life and computer resources available. This allowed us to quickly identify some gaps within the existing system which we could address in our project. After brief consultation with other students and the systems staff, we decided to address the lack of applications to support group project work. Although we chose a focus for our project quickly, we by no means came to it with a fixed agenda. Our initial notion of group project support was very broad and it evolved as we worked with users on the design.

Our prior experience was important in identifying a need within the existing system and understanding the general culture of the faculty, but it was only a starting point. Following the ideas Bodker and Pederson [2], who emphasize the importance of understanding context, we planned to conduct a close examination of student work practices in order to develop a fuller understanding of group project work. While we had a clear vision of what we wanted to achieve with this, our sense of how to proceed was not entirely clear. Unlike projects we had encountered in the PD literature which tend to focus on a small, stable group within a workplace, we did not have an obvious group of users to turn to. Instead, we needed to identify a surrogate group of users who would be willing to participate in the project.

Faced with this challenge, we decided to begin the process with a survey. We prepared a set of questions about the nature of group work which students had participated in, the tools they used and the problems they encountered, as well as their interest in participating in our project. In conducting the survey, we tried to make the process as personal as possible. We approached 20 students, explaining our project and asking them to fill out the survey. We were aware that surveys are not a well-accepted method within the participatory design approach as they encourage passive participation and generate limited information; however, we expected that it would give us some general information about group project work at FIS from a wide variety of students and help us to identify some people who were currently involved in group work and interested in working with us further.

The survey provided some useful preliminary information. It gave us a general idea about the size of groups (they usually contain 2-5 members), their common tasks (essays, reports, discussion groups, oral presentations), the length of the projects (anywhere from 2-13 weeks), and the tools that students use (word processors, data analysis software, electronic mail, and World Wide Web browsers and development tools). It also alerted us to some problem areas within group work which we were able to explore more fully in our subsequent activities. The survey was more important as a means to connect with users, however. Within FIS, is not uncommon for students to conduct surveys among their colleagues as a part of their course work. Our survey, then, allowed us to approach students in a way that was familiar to them and then "test the waters" for participation in the project. Students had an opportunity to hear about our project, take part in a perfunctory way, and then make a decision about continued participation.

Once we had generated some interest in the project through the survey, we were able to move on to more standard methods of participatory design. Using the connections we had made in the survey process, we conducted observations of and interviews with 4 project groups. While the groups were selected because of their willingness to cooperate in the design process rather than their "representativeness", they did reflect a diversity of group project work in the faculty. They included part-time and full-time students from both first and second year courses, and the groups were completing various project tasks. We observed the groups in meetings, noting the tools they used and problems they encountered, and at the end of the sessions asked questions about their work. In this process, we hoped to gain more detailed information about how groups function, their primary activities, and the tools they use to complete their tasks. We also hoped that careful observation and questioning

would help to uncover the unarticulated parts of group work described by Wynn [18] that are crucial to its success.

Much of what we observed confirmed and re-enforced impressions from the survey, as well as from our own experience. Group project work at FIS is extremely varied and diverse. Not only the tasks, but also the composition of the groups, their skills, ways of working, and preferred tools vary widely. We also found that while much of the work is completed by individuals, communication and coordination among the group members were essential to the success of the project. Electronic mail was extremely important in this coordination, allowing students to make decisions and share information regardless of their individual locations or schedules. The observations also revealed a surprising number of problems in the central and seemingly routine activities in group project work. File sharing was a source of nearly universal frustration. There was no easy and straightforward way to share files on the FIS system. Students employed a variety of methods, everything from attaching it to e-mail messages or cutting and pasting into e-mail messages or posting files on the World Wide Web, to sharing floppy disks. All of these methods were fraught with problems, however. Scheduling also showed itself to be a challenge for groups. With the variety of commitments outside of FIS they may have, getting all group members together in one place could be difficult, and students often used e-mail as a means to coordinate themselves or as a substitute for face to face meetings.

The observations and interviews of groups in action served several different purposes in the design process. The information we gathered helped us to identify some of the major problems within group project work (communication, scheduling, and file sharing) and begin to think about possible solutions. At the same time, it allowed us to establish a relationship with the participants. As we observed students and invited them to reflect on what they were doing, we attempted to demonstrate the value of their contribution to the process. It was also an opportunity to show our usefulness to them. During one of the sessions, a member of the design team decided to step out of her role as an observer to offer advice on a problem that the group was tackling. Far from compromising her position as a designer, she enhanced it by showing the value of her presence to the other students. She revealed her understanding of their situation and demonstrated that the process of participatory design can have some immediate benefits.

Investigating Existing Systems
As we gathered information about group work practices at FIS, we also conducted an investigation of existing systems to support group collaboration. Several

contextual concerns guided our investigations. Consultation with systems staff at the faculty revealed concerns about their ability to support existing software packages for group work, such as Lotus Notes, on the network. Our survey and observations also showed that many students worked from home, raising problems of accessibility. For these reasons, we decided to focus on web-based group work support tools.

A preliminary search of the literature uncovered few other relevant cases and systems. While web-based group support systems are becoming common, the groups and tasks addressed by other researchers did not translate well to the small-scale, short-term nature of group work at FIS. Instead of developing a completely novel application for our situation, however, we decided to focus on existing tools available on the Web. In fact, we discovered that a number of these tools were already supported on the faculty network and students were using them in their course work. By piecing together a number of individual tools into an integrated facility, we were able to focus on developing a system that is well-tailored to the needs of the users, as well as being familiar to them and more easily supported by systems staff. We began to envision the web site as a space, like a team project room, where members could go with resources readily available to accomplish their common tasks.

Envisioning the Group Project Work Support Tool
The first stage of our project provided us with a solid base of knowledge about group work at FIS and some of the tools that were available, and in the next stage, we planned to get students actively involved in envisioning what they wanted and needed in a group project support tool. Reflecting on the experiences of Ehn [9] and Kensing [14], we determined that a workshop would provide an appropriate vehicle to generate ideas. Gathering students together for an event focused on the project was particularly important in this case because they had not necessarily had contact with each other in the previous stage. Planning and executing a workshop posed several challenges in our situation, however. Attracting users was a significant hurdle. The participation of students to this point had been fairly passive - we met with them on their own terms (mainly during group meetings) and they answered our questions. It was not clear that amidst the many competing demands that they face, students (even the ones who showed interest in the project) would be willing to set aside dedicated time and energy to devote to the project. It was also a challenge to determine which activities to include in the workshop. Given the short duration of the project (13 weeks), we realized that we would probably have only one opportunity to bring users together like this, so we wanted

to choose activities that would be the most useful for the project and attractive to users.

Our solution involved innovation based on careful reflection of the situation. We realized that we would have to work actively to attract users to participate. By placing the focus on practical results for students ahead of our design ideas we attempted to turn the workshop into a valuable event, giving it a distinctive title ("Building the 'A' Team: A Workshop to Improve Computing Resources for Group Work at FIS") and advertising it heavily through posters, electronic notices, and word of mouth. We tried to motivate users by stressing the immediate benefits of participation in addition to the long-term goal of a better group support system. We promoted the workshop as an opportunity for students to improve their own group work projects. We also prepared a package of handouts with tips and software tools that they might find useful in their current work. Due to our limited time, we decided to collapse several activities into one session. Although we felt that the future workshop technique as described by Kensing [14] could be useful, we reluctantly decided that we did not have the time to carry it out. We did, however, adapt parts of this technique, the critique and envisionment sessions, into a warm-up exercise in the workshop. The workshop began with an exercise on the pros and cons of group work during which each person could emphasize their interests, skills and experiences. This allowed participants to start the workshop as key players rather than passive listeners. We described our research project after the first exercise to make it clear that the experience, ideas and desires of students would lead our work. The main focus of the workshop was mock-up exercises. As Ehn and Kyng [8] observe, this method encourages active user involvement and "helps users and designers transcend the borders of reality and imagine the impossible". We planned a brainstorming session, where participants could share their ideas of what they would like to see in a group support tool, and a mock-up exercise where they could sketch their vision of the system, using large sheets of cardboard and post-it notes. As a final exercise, we also planned to ask participants to provide written and oral comments on a Web-based mock-up of the group work space that we had created, reflecting our own vision of the application. Rather than start the workshop by showcasing the preliminary stages of our work, we completed the session with our mock-up and put the emphasis in the order we hoped to reinforce. Student's interests came first in this process and our ideas were to follow from that starting point. No systems staff or technical advisors attended this event as it was organized and facilitated exclusively for FIS students.

The event, conducted on a Sunday afternoon, attracted eight participants. Most were first year, full-time students, but 2nd year and part-time students were also represented. In addition, while most of the attendees had been previously involved in the project at the beginning stage, we did manage to attract several students who were new to the project.

The envisionment workshop was valuable in several ways. On one level, it produced valuable concrete ideas for the project. Participants' suggestions in the brainstorming and mock-up exercises confirmed that the clear priorities within a group work support application were communication tools, file-sharing mechanisms, and scheduling software. A surprising and unexpected need, however, were links to resources and help instructions. In their mock-ups, students included links to commonly used resources on the Web and requested that information on the existing resources and applications on the FIS network be included on the site. This significantly changed our notion of what users needed. Clearly, ready access to basic information about how to use the tools and resources they already have was an aspect of supporting group work that we had not even considered. This and the critiques of our computer-based mock-up also underscored the importance of clear explanation and on-line help for any tools that we included in our prototype. As one participant commented, "I am always in favour of less technical language and more explanation and extensive on-line help." The results of the workshop were important, but given the small number of participants, not necessarily representative of the entire user group. Nonetheless, in an iterative design process the input and reaction of even small groups is important, as long as the biases of the results are recognized.

The workshop was also an important experience for the users. They seemed to appreciate the importance of their participation, both in the short and long term sense. In the evaluation at the end of the session, users commented that the workshop had given them new ideas about group work and tools to use. It also generated enthusiasm for the project, and most participants expressed a willingness to participate in the future prototyping sessions.

DEVELOPMENT OF THE PROTOTYPE
The prototyping phase of the design process was a critical one. Not only was it intended to develop an application to meet the needs of the students, but to provide further opportunity for students to get involved in the project. The observations, interviews, and workshop all demonstrated that there were some common areas of concern among groups, regardless of their task or composition. One of the major preoccupations was file sharing. Although we were unable to create a working tool within the short time period we had, we developed a

We addressed several general design issues in the original prototype. Accessibility was a major concern. We conducted a second brief survey, sent out to all FIS Master's students via e-mail, concerning their computing resources outside the faculty and found that the type of equipment they use varies widely. Because students could often be accessing the group work space site from home or work, we tried to keep the hardware and software requirements to use the tools to a minimum. We also attempted to ensure that the site would be accessible by most web browsers, creating pages that were simple and readable and staying away from graphics and frames. And while we created a good basic default space, we tried to provide an application that is easily customizable. We presented the site as a template so that students could tailor the group work space according to the needs of their project, and offered options in tools so that they could choose the one most appropriate to their needs.

Once we had developed the first group work space prototype, we began to test it with users. During the first session, we met with 4 small groups which included participants of the workshop, interviewees, and survey respondents. We encouraged them to explore the site and go through some common tasks, while we recorded their reactions and comments. Participants showed varying degrees of willingness when trying the various tools. Most of the sessions lapsed into lengthy and helpful discussions of problems and suggestions for change. Many of the participants asked for further help. They wanted to know "what each tool did and when to use it" quickly and easily. Their comments also encouraged us to incorporate more choices among the tools. One participant also suggested that we provide another communication tool, by integrating electronic mail into the site, while another requested a weekly schedule, in addition to the monthly calendar. They also suggested a number of additions to

Figure 1. A screen shot based on the opening page of the site.
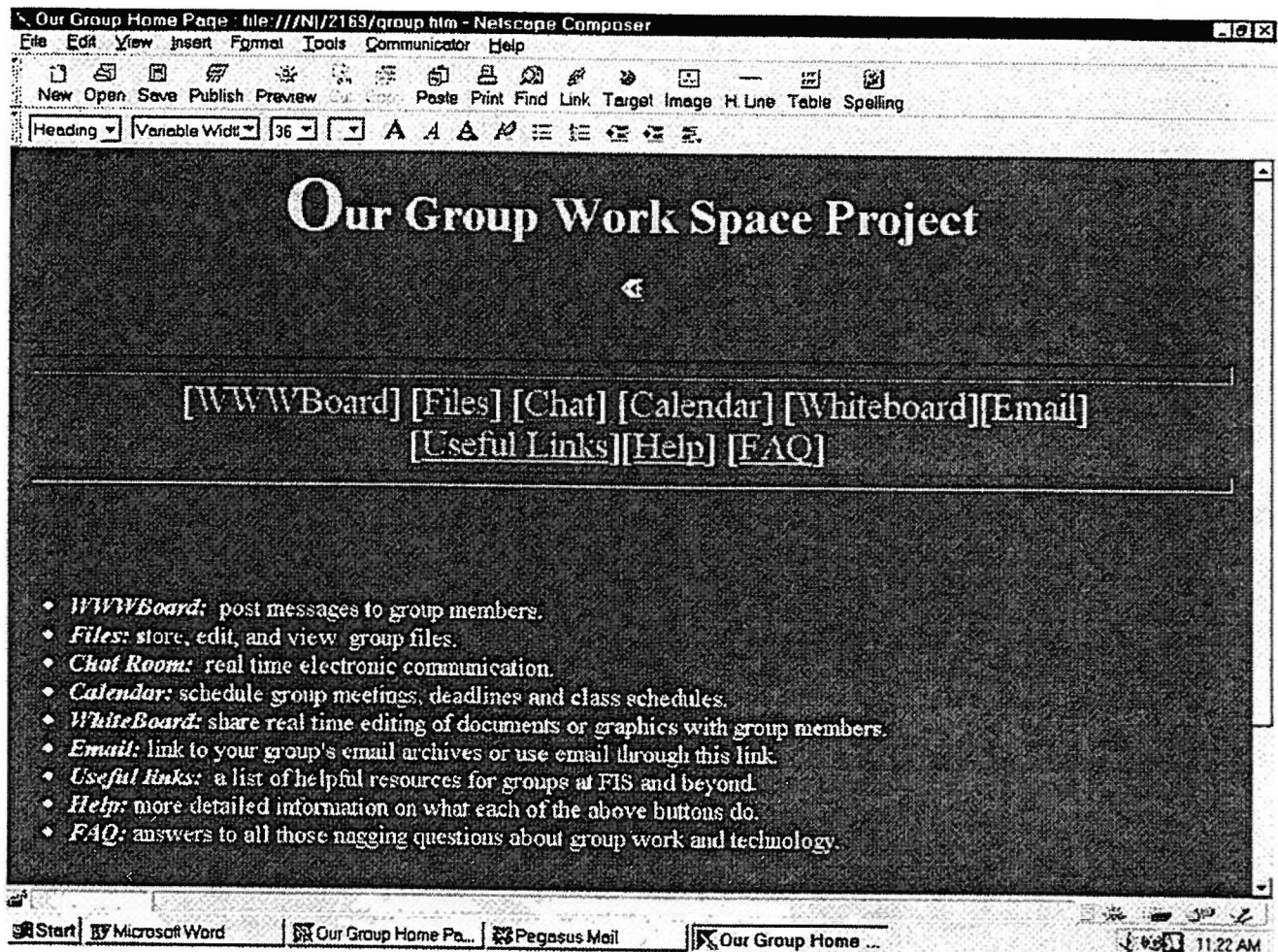
the "helpful resources page".

We brought the users' reactions back to the design team for discussion and implementation. In response to their comments we added an expanded help section, as well as brief explanations of each tool on the main page. We also created a mocked-up electronic mail archive and a weekly schedule template. Finally, we made several additions to the list of commonly used resources.

Given the reluctance of students to put the prototype to work the first time, during the second prototyping session we decided to provide more opportunities to use the group work space site. In this session, we brought 6 participants (all of whom had been previously involved in the project) together and took them through the tools with use scenarios that we had prepared beforehand. This proved to be more fruitful in identifying actual breakdowns in use. For example, the puzzled looks we got when encouraging the participants to customize the site for themselves, led us to the realization that we had not provided enough explanation of how to change web pages for students with limited experience with this medium. In another case, while using the chat tool, participants found that they needed more flexibility in the sizing of the window and discovered that having to click the mouse to send statements, rather than hitting the return key, interrupted the flow of conversation.

The prototyping sessions were valuable in several ways. It gave us important information about problems that we could not have gained in any other way. More importantly, this process seemed to impress the participants. Seeing their ideas and suggestions being incorporated into the design encouraged them to see the value of their participation. One participant in particular expressed appreciation for the time and effort we were taking to work with users. In comparison with a system development process he had been through in his workplace, he explained, it was far more successful and satisfying for him.

For the purposes of the course, the design process ended at this point. We attempted to provide a prototype of the group work space (see Figure 1) that would serve as a basis for a sustainable system and in many ways we feel that our prototype meets this goal.[2] The prototype consists of tools, along with the exercise we conducted and the data we gathered. The tools address the major activities and problems of group work at FIS. The group work space also offers sufficient flexibility to be useful for the range of students and projects at the faculty. It offers tailorability in content, as well as choice in the

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[2] The group work space prototype web site is located at: http://www.fis.utoronto.ca/courses/LIS/2169/winter1998/group.htm

communication and scheduling tools. This prototype offers a basis for further development, but significant work is still necessary. Several of the tools are only mocked up and extensive work will be needed to create functionality. As these tools are developed, ongoing engagement with students will be necessary as they attempt to apply and customize the tool in their project work.

DISCUSSION

Our experience with design at FIS has led us to make some observations about learning and using participatory design in a non-traditional setting.

PD in an Educational Community

Using participatory design in an educational setting demonstrates that while this approach has something to contribute to the process of design in a "community of interest", it is necessary to adapt PD methods for this environment. In contrast to traditional settings for PD, the user group is large and diverse, with a high turnover rate. At the same time, however, they share a sense of affiliation and identity that is absent from the consumers of generic software. Thus, the modes of participation and users' motivations for getting involved in the development process needed to be reconsidered and revised for this middle ground.

Our first challenge was to find a means to involve the users. From the outset, it was clear that we needed to develop and sustain a relationship with a surrogate group, while at the same time keeping the larger student body aware of the project. We could not construct a completely representative group, but attempted to encourage involvement from as many different kinds of users as possible at the various stages of the process.

We also had to find a means to invite participation. We could not compel students to participate, nor could we assume that they would automatically be interested in the project. Thus, we had to work to continually solicit their participation. Developing appropriate ways of motivating students at FIS to take part in the project was part of this challenge. In other PD projects, users are driven by their expectations of the direct benefits that they will receive at the end of the process. In our case, however, the implementation of the project was distant and given the high turnover in the user population, many students would not be around to reap the benefits of their participation. Instead, we had to look to other ways of encouraging them to take part. Unfortunately, the existing PD literature provided little guidance for our situation. The implicit assumption among designers that the superiority of a cooperatively designed system will be sufficient to motivate users did not hold true for us. To deal with this situation, we drew upon one design team member's experience in community development, which provided

us with ideas about how to generate and sustain interest in community projects.

To compensate for the lack of direct long-term benefits, we focused on satisfying short-term practical needs. In the interaction with students, we emphasized the immediate benefits of participation. With the handouts at the workshop and a "Frequently Asked Questions" page, we offered some immediate solutions to problems that students were facing in group work. Certainly, these measures alone did not compel students to participate, but it helped to establish a mutually rewarding relationship between the designers and users, and re-enforced the value of participation.

Personal relationships also played a significant role in motivating users. Often, we drew on our existing friendships within the faculty to generate interest and participation in the project. In other cases, relationships developed over the course of the project. Students took part, not just as a favour to us, but because in the context of our relationships, our commitment to, and enthusiasm for creating this tool meant something to them.

Although we have no direct evidence, other factors were also likely at work to motivate participation. Undoubtedly, some were motivated by an altruistic desire to contribute to the FIS community. Others were probably drawn to the project out of curiosity and a desire to learn, both about the group project support tool and the design process.

Our experience highlights the crucial role that motivation plays in participatory design. It demonstrates that user participation cannot be taken as a given in the design process. Users are drawn to participate for many different reasons and designers need to attend to this and work to cultivate a mutually rewarding and beneficial relationship with users. Clearly this is an area that needs to be explored further, especially as designers attempt to apply PD approaches to settings with a diverse and changing population that can be characterized as a community of interest.

Users as Designers

While the idea of design in use has been given some attention in the literature [12, 1], there have been few studies which explore the experience of users who are also designers in any depth. In this case, we found that our simultaneous role as designers and members of the user group presented a number of advantages and challenges.

Our prior experience at FIS was a particular asset at the outset of the design process. We began the project with a general understanding of the organizational culture and work practices at FIS. This allowed us to quickly identify a design problem and choose development techniques that were most appropriate to the situation. At the same, time, however, we had to be careful to use our own experiences

and perspectives only as a starting point of our investigations. As Rector et al [16] show, intense user involvement on design teams can compromise their perspective and blind them to problems in design. We attempted to avoid this pitfall, following the advice of Wynn [18] and trying to be aware of our own biases and ensure that they did not distort our observations. Whenever possible, we asked users to explain their responses and question our interpretations.

The same was true of using our concurrent experiences in a project team. In many ways our group represented a microcosm of the FIS community: members of our group came from two streams and different stages of the program; one member attended part-time, while another commuted from outside the city; and we have different academic backgrounds and experience in systems design. The tensions and frustrations we faced in completing the tasks associated with our own project mirrored concerns common to many other groups and provided us with another opportunity to reflect on the situation we were dealing with. At the same time, however, in developing the prototype, we had to resist the tendency to let our experiences overshadow those that we encountered among other students.

Our position as students and designers also influenced our relationship with the user group. As students, we did not have the benefit of the legitimacy and status that comes from being outside professional researchers and developers. Nonetheless, our existing friendships with other students, shared experiences, and common vocabulary sometimes made it easier to establish a relationship with the user group. We could demonstrate a genuine understanding and interest in their problems almost immediately, helping to build support for the project amongst other students.

Reflections on Learning PD

As newcomers to participatory design, the "learning by doing" that we engaged in taught us several lessons about this process. Learning to trust our instincts for adaptation was a challenging and important discovery. Although proponents of the PD approach are often adamant that the methods are not a blueprint for design and stress the need for flexibility, it took us some time to fully appreciate this. Like our colleagues from previous years [15], we were initially pre-occupied with "getting things right", rather than reflecting on how the methods could be adapted to our situation. This changed quickly as we realized that established techniques and the assumptions they carried did not always fit the peculiarities of our situation. This forced us to experiment more freely, but it took some time before we felt confident that we were retaining the spirit of participatory design within our innovations. This experience underscores the importance

of exposing students of participatory design to the growing range of projects, as well as giving them a good grounding in the "classic" PD literature.

In the course of the project, we also learned to play with the limits of technology. Bodker and Gronbaek [3] urge designers to strike a balance between fantasy and technological limitations: prototypes should be stable enough so that users can understand them, but even hands-on experience with imagined parts of a future system are valuable. The short time span of the project often made it difficult for us to solve all of the technical problems that faced us. Initially, we often felt intimidated and constrained by our inability to create functioning tools. As we worked with the students, however, we began to appreciate that functionality was not always the most important goal, especially in the early stages. We encouraged participants in the envisionment workshop and prototyping sessions not to limit their ideas to what they imagined was feasible, and eventually began to allow ourselves the same liberty. As the development progressed, we made more use of the possibilities offered by the Web environment to mock up parts of the system. This was not always a perfect solution, but it gave the students a better sense of the future direction of the prototype.

CONCLUSIONS

Our project at FIS provided both a challenging and rewarding experience of participatory design. Applying PD methods in an educational setting forced us to explore how they work in the middle ground of system design between bespoke systems and generic software. Working with a community of interest compelled us to reflect on issues of user motivation and participation. Our adaptations and innovations did not always meet our expectations, but they allowed us to experiment with balancing immediate and long-term benefits in the design process and nurturing the relationship between users and designers. The challenges we faced as we confronted these issues have given us an understanding of PD that we may not have gained in a more conventional setting. For the FIS community, the prototype that we have developed provides the basis for a sustainable tool. It addresses the main problems of group work, while accommodating the diversity of users and tasks, both present and future. There is still much work to be done, both on the technical aspects and with users, in order to fully implement the application. The website has been accepted as a part of the FIS Student Council site and will continue to evolve as the functionality and format of the project moves away from its initial role as part of a research exercise. We recognize that continuing involvement of students may pose a challenge in an environment where their involvement in systems design is minimal; however it is our hope that the usefulness of the tool and value of user participation in its development will help motivate

students and systems staff to continue this process. The ongoing work will continue to be done by students but rather than researchers they will be lab advisors supervised by systems staff. We hope that this will allow for future developments to reflect the priorities of students. Regardless of the final outcome, however, we have offered our colleagues, many of whom will be involved in systems development as designers **and** users, a different way of thinking about the systems design process.

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