

# Designing for Change: Findings from an Ethnographic Study of a Complex Learning Environment

Aditya Johri

School of Education, Stanford University, Stanford CA 94305

Tel: (650) 497-9801 Fax: (650) 725-7412

Email: ajohri@stanford.edu

**Abstract:** The design of a learning environment is just the beginning of a process that aims to end with successful adoption and use of that environment for valuable learning goals. To discover elements that influence communication and collaboration in a complex setting this ethnographic study explored the Global Classroom Project, a test-bed designed to examine issues of cross-cultural collaboration in an educational setting. The findings indicate that although some factors that influence a learning environment stay constant over time others do not and that it is critical to catalogue these factors. The findings further identify the benefits of continually evaluating an environment after it is implemented in a natural setting and of a flexible design of the learning environment.

## **The Global Classroom Project**

The Global Classroom Project (GCP) provides an online distance-learning environment for students from US and Russia to collaborate on projects to produce text based documents and/or digital artifacts such as Websites or CD-ROMs. In addition to classes that are completely online the GCP also offers face-to-face classes for students in their respective higher education institutions. The first pilot GCP class was offered in Spring 2000. Since then a total of 7 classes (both graduate and undergraduate level) have been offered over a period of 5 semesters. The purpose of the class is two-fold - to teach technical communication skills to the students such as resume, proposal and project report writing; and to teach them skills needed to work in a cross-cultural online environment. The learning philosophy behind the GCP is experiential learning i.e. students learn best by personal experience which the instructors foster by providing students with a setting that emulates the workplace and brings up similar issues and problems.

## The Technology

The GCP uses WebBoard, a web forums and chat software, as the platform for student interaction. WebBoard is a “powerful and easy to use” message board tool. WebBoard provides support for chat, graphics, archiving and other technical features. According to its website, some of the leading uses for WebBoard are – community building, technical support, online education, project collaboration, virtual meetings, and information management. In the GCP, WebBoard is used primarily as an asynchronous communication medium, to post messages and to exchange documents, usually as attachments. Communication is also supported by the use of emails.

## Students and Activity

The total number of students in the class varies each semester and has ranged from 20 to 36 (American = 6 to 24, Russian = 9 to 30). The Russian students are typically graduate students enrolled in social sciences program whereas the American students are either undergraduate and graduate and range from liberal arts to engineering majors. The major activity of the class is a group project to be submitted at the end of the semester. The groups consist of American and Russian students who are assigned an open-ended topic to research, write a proposal for their final project and then work together to complete the project based on the proposal. The topics given to the students have ranged from “analysis of propaganda” to “comparison of online greeting cards.” Several activities given to the students lead to the group project. They are asked to write a resume that is posted online and to come up with a list of annotated bibliographies that can be used for their project. They are also given a list of readings that are discussed electronically on the WebBoard and sometimes in the face-to-face classes.

## Research Methodology

The research was a complex intervention (Brown, 1992) designed as an ethnographic study and data was collected using in-depth interviews, surveys, participant observation, analysis of online transcripts, and informal communication with participants. A total of 15 participants were interviewed. All the student interviews were face-to-face except one that was over the phone and each interview lasted anywhere from 45 minutes to 90 minutes. The primary subjects for the study were American students. The researcher also participated as a team member of a group of 6 students for a period of 8 weeks and also observed the class. Other data gathering methods included open-ended surveys, and informal communication with students and the instructor. Detailed analysis of online WebBoard transcripts provided further data. Data was also gathered from the Russian instructor via email.

## Findings

Factors that influence the GCP can broadly be classified into two categories: factors that remain *constant* across the semesters and factors that *change* from semester to semester. For instance, WebBoard as the technology for communication remains constant across semesters. On the other hand, class size and composition vary every semester. Within the variable factors there can be a further subdivision: Instructor Independent and Instructor Controlled Factors (see Table 1).

Table 1: Constant and Variable Factors Across Semesters

Constant Factors Across Semesters	Variable Factors Across Semesters	
	Instructor Controlled	Instructor Independent
Technology	Readings	Class Size
Length of Interaction	Face-to-face vs. Online Classes	Class Composition
	Scaffolding	Schedule of Class
	Nature of Activity	Prior Knowledge and Expectations

## Implications

In the GCP the instructors have always modified their classes based on experiences from previous classes and tried to follow an iterative design policy. For instance, in Spring 2002 they included a special section on how to use the WebBoard, keeping in mind the difficulties faced by students earlier. The number of face-to-face classes has also increased considerably as a percentage of the total classes and American students now have fewer collaboration problems as compared to previous classes. In the Spring 2002 semester the instructor introduced a signed contract among the students for the first time to make sure that there was an even effort by all team members. In this semester they also experimented with personal questions called "Ice Breakers" that were designed to increase social interaction among the students. Each semester has raised unexpected issues and only after being in use for 5 consecutive semesters has the class reached some kind of equilibrium.

## Conclusion

The real test of the success of any educational technology starts once the technology is used in its natural setting and environmental factors start interacting with the technology. One obvious solution to implement the technology successfully would be to try and control as many factors as possible every time the technology is used. This is neither feasible nor desirable. The other alternative is to design for change and provide multiple affordances for students. In addition, it is essential to continually evaluate the environment after it is implemented and iterate to find the optimum solution. Moreover, as projects are scaled up to real world context factors that can affect a class may not always be predictable and the pragmatic solution is to design for change, catalogue all possible influences and improve upon them every semester. This case study of the GCP identifies the importance and need for iterative design of learning environments.

## References

Brown, A. (1992). Design Experiments: Theoretical and Methodological Challenges in Creating Complex Interventions in Classroom Settings. *The Journal of the Learning Sciences*, 2(2), 141-178. Mahwah, N.J: L. Erlbaum Associates.

## Acknowledgments

My sincere thanks to TyAnna Herrington, Wendy Newstetter, Amy Bruckman and an anonymous reviewer for their helpful critique, comments and advice.