

## **Findings Abstract**

### **Technology and Pedagogy: Changing Roles of Pedagogy in a Project-Based Learning Environment**

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#### **Influence of Technology on Projects**

Both students and teachers unanimously were of the opinion that technology played a strong role in influencing student projects. This included the creation and completion of projects. Students cited the Internet as providing access to vast and varied information when researching their projects. Students worked on real world projects, and indicated technology facilitated their work. For example, a group of students coordinated their work with a local community group in rural Ecuador using e-mail. For such students, they could not envision working on the project if they did not have access to e-mail facilities. Another group of students prepared documents about information dissemination to cotton farmers in rural Uzbekistan. According to the students, when reviewing literature and collecting information about the country, the library had a few, old books that were of little use. But the Internet was very helpful in studying the country, and the students felt that it was very invaluable in completing their project. In class presentations, students used Microsoft PowerPoint to present their work in a “clear, professional and well designed” format.

#### **Flexibility of Technology**

For many students, the flexibility that technology provided in working in groups was important. Students stated that they coordinated their group projects through the database, and this reduced the need and frequency for face-to-face meetings. According to the students, as working on the projects required group work, they indicated that without technology (online coordination), it would have been difficult to complete their projects on time. In addition, the use of the online database allowed long-distance learning for students who could not come to class. During the period of this study, a student who was involved in Sweden took a course and worked on projects with students at the university.

#### **Concerns Surrounding the Use of Technology**

Several students were of the opinion that the application of technology for instruction, whether online or in a classroom environment, should take into consideration student skills and preferences for the medium of instruction. Some students indicated that they did not have any experience in online learning when they first joined the program, and without any orientation or technology skills, were required to go online immediately to begin in their learning. They cited frustration during the first few weeks into the program and reported of students who dropped out of the program because of a lack of computer skills and thus an inability to adapt quickly to the use of the online database. Several students cited lack of privacy in using the online database. They said that teacher-student confidentiality was breached when they used the database to submit their individual assignments, and teachers provided evaluation of their work online, which was

accessible to other class members. An interview with one student revealed reluctance by students to post their work online for fear of peer “intrusion” into their work and a preference for giving a hard copy of their work to the teacher in class. Students complained that teachers abdicated their responsibility of teaching students by encouraging students to use the Internet. As the study revealed, there was a strong use of the Internet for research. Teachers encouraged students to use the online database when interacting with them. Students said that teachers were hiding behind the “veil of technology” and provided limited support in student research for projects. While students appreciated teacher’s support when using the online medium, they indicated that too much emphasis on technology undermined the real concern for content. Students felt that they were more inclined to use online sources for guiding their project than teachers. Students stated that while technology facilitated group coordination, it nevertheless undermined collaborative work by students. Some students argued that by posting their reports to the group database, it appeared they were doing their individual work with limited contacts with colleagues. Several students said they were not used to virtual meetings, and would have preferred face-to-face meeting of team members. The reduced human contact, because of the use of the database, lessened some student’s belief that they were working with their peers on the same project. One student reported uneasiness in expressing his ideas using the database and pointed out he would have been more productive if he addressed his colleagues face-to-face.

#### Team Study’s Role in Technology Use

Students had varied feelings about project-based learning. For those positive about teamwork, they cited the sharing of skills and resources. Teachers agreed with students who were positive about working in groups, arguing the quality of work produced by students had mainly been due to the different expertise students shared to implement projects. Narrating one example, Jessica said if in a “group there are students from visual communication working with students from history and computer science, such a combination can produce tremendous results.” Even the less enthusiastic project-based learning students were in agreement with the rest of the participants in pointing out the benefits of division of work team study encouraged. But they had reservations about the difficulty in making groups members work on projects. To them, it was difficult to organize meetings, indicating personal conflict could damage project success, and there was a concern of “joy riders” taking advantage of other student’s hard work.

In rebutting some of the students’ concerns already mentioned teachers found technology to be a tool for dealing with some the students concerns. According to the teachers, technology provided a means to monitor group activities, which in a face-to-face environment would have been difficult. Teachers said that as students posted their work to the database, they were able to know which students contributed to the group work. In addition, they argued conflict of scheduling was easily resolved if students coordinated their activities on the online forum.

#### Learning outside the Classroom

As pointed out by the director, and supported by the teachers and students, use of technology allowed learning outside the “restricting walls” of the classroom. Students asked their teachers questions, and teachers provided answers to students’ questions more frequently than in the traditional classroom. Online postings during evenings and weekend revealed the need for interaction between students and teachers outside class.

Equating the online database with classroom activity and the e-mail interaction with individual student visits to teacher's offices, a student said technology allowed for teacher-students interaction "anytime, anywhere."

#### Alternative Medium

Technology supplemented classroom teaching. Teachers found the limited classroom sessions were not adequate for covering work related to the real world projects students implemented. They indicated the online forum provided them with more time to guide their students in their projects. Students said the online forum was an alternative way of interacting with their teachers. But teachers and students emphasized that technology, whether used online or in the classroom, was supplemental to teacher instruction, and would not replace face-to-face instruction.

#### Conclusion

The use of technology in this setting had a major impact on the project-based work of the students by providing flexibility and readily accessible information. While most viewed the use of technology as positive in supporting the mentoring of students "anytime, anywhere," others saw technology in a less positive light and as hindering their learning. GLC faculty indicated that the pedagogical model of project-based learning was and could be supported in a technology-rich environment but stated that students needed some pre-instruction as to how this model worked before beginning the coursework. The faculty at the GLC community was very positive about the impact of the use of technology in providing alternative ways of communicating information to students and encouraging "after hours" learning in a project-based learning environment.