Learning from Students:
Continuous Improvement in International Collaboration

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ABSTRACT

Just a few years ago, incorporating team projects in a course meant that all students had to be collocated, able to meet face-to-face. Now, distributed teams use the Internet and other technologies to work across time and distance. Instructors who include distributed team projects in their courses add the dimensions of collaborative technologies, language, and culture to the technical problem-solving and team-building aspects. Continuous improvement in course structure and content are necessary to meet the changing needs of students as well as the changes in technology. This paper traces the evolution of a distributed project course offered since 1998. Each time the course has been run, students, faculty, and researchers have learned important lessons, which have been used to improve successive course offerings.

Categories and Subject Descriptors

K.3.2 [**Computing Milieux**]: Computer and Information Science Education – Computer science education, information systems education.

General Terms

Human Factors

Keywords

Virtual teams, software engineering education, team performance, group dynamics.

1. INTRODUCTION

For the past few years, the authors have been part of a research group investigating distributed teams in computer science education. The project has been the basis for a number of separate studies. Study A has focused on the software development process [3-6], while Study B has focused on group development in virtual teams [7-11]. As researchers, we are an "invisible" presence in the courses; that is, we are not the teachers involved and none of the students ever see us. We find that this makes the students more forthcoming and honest in sharing their thoughts, ideas, and feelings. We keep the students' trust by promising not to share their comments with course instructors until after course grades are completed and by offering instructors objective data that can improve the next course offering. This objective data is gathered by learning from the students' communication, team performance, and feedback.

We begin with some brief background about Runestone. The next section explores the lessons learned for each of the four instances of the course and how those lessons have translated into improvements in successive years. We end by summarizing the major outcomes, which we categorize as technical, team, and cultural.

2. AN OVERVIEW OF THE RUNESTONE PROJECT

The Runestone Project is an international collaboration between Uppsala University in Sweden and Grand Valley State University (GVSU) in Michigan, USA. Originally, the Runestone Project was a three-year project (1998 through 2000) sponsored by the Swedish Council for Renewal of Undergraduate Education. Because of the positive benefits to both students and teachers, the Runestone project continues, without outside funding, as a joint collaboration of Uppsala and GVSU.

The primary aim for the Runestone Project has been to introduce "international experience into undergraduate Computer Science education in a way that has value for all participants" [2]. This aim has been accomplished by incorporating an international project into courses at both Uppsala University and Grand Valley State University. Students have collaborated closely with their foreign counterparts using appropriate technologies to complete a software development project. This remote communication has encompassed Runestone's secondary aim, to "identify effective