

INFORMATION SYSTEMS EDUCATION JOURNAL

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A Project Management Approach to Applying Best Practices to Online CS/MIS Experiential Learning Projects

Dana Schwieger
dschwieger@semo.edu
Department of Accounting

Ken Surendran
Retired - Department of Computer Science

Southeast Missouri State University
Cape Girardeau MO 67031

Abstract

The value of experiential learning projects (which are usually major assessments in courses) in education has been touted since the early 1900s (Dewey, 1938). These projects have the potential to deepen students' understanding of course topics by allowing them to put concepts into practice and watch the results develop. However, experiential learning projects require significant guidance, communication between students and faculty, and direction. Coupled with the communication intricacies of an online learning environment, experiential learning projects become a little more difficult to manage. In this article, the authors examine some of the best practices for teaching online courses as they relate to experiential learning projects, the value of experiential learning projects and then apply a project management approach to addressing the challenges of assigning experiential learning projects in online courses looking at two courses taught at the authors' institution. The authors' then describe some best practices that they have incorporated to better manage the application of experiential learning projects in their online classrooms.

Keywords: Experiential learning projects, Online teaching, Project Management, IS Management course, and CS/CIS and MIS programs

1. INTRODUCTION

The online learning environment has been growing and expanding for a number of years from single course offerings to entire university programs. In turn, the locality of students enrolled in these courses has expanded far beyond the boundaries designed by face-to-face courses. For faculty assigning upper level coursework and projects requiring more instructor hands-on direction or student interaction, the adjustment to the online environment may be a little more complicated. Faculty must find ways for providing an

equivalent online learning experience to that of the face-to-face environment.

In this paper, the authors examine some of the best teaching practices for the online environment. They also examine the value of experiential learning projects (a term used here for major assessments in a course) and a project management approach to incorporating such projects into the online setting. The authors also describe some best practices for teaching online learning courses and their application to experiential learning projects using the framework provided by Elbeik and Thomas' Project Management (PM) model (1998).

2. LITERATURE REVIEW

In this section, the authors examine three streams of literature. The first stream focuses upon best teaching practices that can be used in the online environment. The second stream describes characteristics of project management which is applied as a framework later in the paper. The third stream of literature draws from the body of research describing experiential learning assessments.

Best Practices for Project-based Teaching Online

A number of articles have been written on best practices for teaching online courses (Fish & Wickersham, 2009; Keengwe & Kidd, 2010). Several of these best practices should be incorporated regardless of delivery mode such as sequencing projects to build upon previous learning experiences or designing projects that create value beyond the classroom environment (Barrett, 2012).

Kerr (2011: 29) compiled ten best practices for teaching online high school courses that can be applied at any level of education and through different modes of delivery. The tasks in Kerr's best practices are to:

- (1) Include multiple sources of content to provide students with a range of perspectives.
- (2) Provide timely, thorough feedback.
- (3) Provide students with opportunities for choosing their assignment submission medium.
- (4) Incorporate opportunities for students to manage their learning process.
- (5) Include rubrics for assessment of work.
- (6) Include examples of discussion responses or student work.
- (7) Create authentic learning experiences.
- (8) Have fun with student introductions.
- (9) Incorporate social media to decrease isolation.
- (10) Ensure students are aware of course technology requirements.

By their nature, online courses have particular characteristics that may need to be addressed to improve the learning experience. The lack of physical presence during communication seems to generate the greatest obstacles in online courses. Thus, faculty should keep in mind that they will need to communicate differently and more carefully when communicating with the class as a whole and with students individually. Faculty must also work a little harder to develop

relationships with the students (Dykman & Davis, 2008; Fish & Wickersham, 2009; Wegmann & McCauley, 2009).

Wegmann and McCauley (2009) further emphasized the importance of purposeful communication from incorporating student introductions at the start of the semester to providing personalized emails offering direction as well as encouragement throughout the course. In developing an online course for a master's degree program in education, McCrory, Putnam, and Jansen (2008) tried to design their courses to provide for student interaction with the subject matter, the instructors, and with other students.

Interacting with the subject matter is at the heart of experiential learning projects. Likewise, communicating effectively is essential in conducting effective experiential learning projects, especially in a setting in which communication obstacles already exist. In the next section, the authors examine a project management model that emphasizes the important role that communication plays in projects. This same model can be applied to online courses and the implementation of experiential learning projects, described in section 2.3, in the online classroom.

Six Stage Project Management Model

The literature reviewed in the previous section emphasized the value of good communication in online classes. Elbeik and Thomas (1998) noted the importance of communication throughout the project management process (Figure 1). Their model consists of five stages briefly defined below:

- The **Define** stage drives the process as the project and key objectives are fully discussed with the stakeholders.
- The **Plan** stage is an ongoing process that may be adjusted as the project unfolds.
- The **Team** members are usually involved with the Plan and Control stages and are led and motivated throughout the project.
- **Communication** takes place at all stages of the project, both formally and informally.
- During the **Control** stage, the activities of the team are monitored in respect of the plan.
- The **Review and Exit** stage consists of a finalizing and evaluation of the project and process as well as an accumulation of lessons learned.

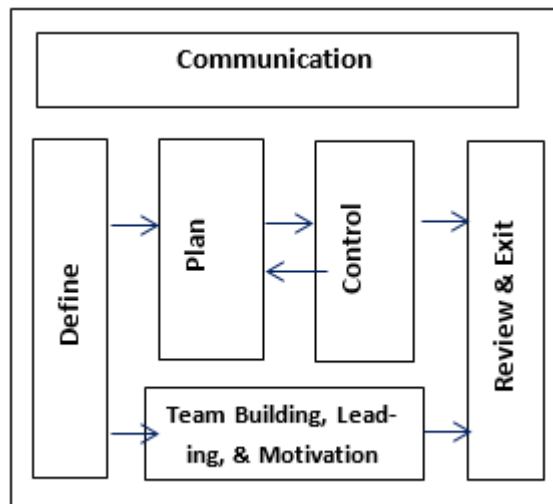


Figure 1 - Elbeik & Thomas (1998), p. 14.

The process may loop and continue as an iterative process for the life of revisions to the project (SME 2. 0, 2012).

Elbeik and Thomas' (1998) model illustrates how strong communication should be applied throughout the life of a project. The model can also be used in the application of experiential learning projects described in the next section.

Experiential Learning Projects

Experiential learning theory has long running roots into research conducted in the early 1900's. Kolb (2005) noted that experiential learning theory is grounded in the work of such noted scholars as Dewey, Lewin, Piaget, James, Jung, Freire, and Rogers. A number of articles have been written regarding the application of experiential learning projects - major assessments in a course - throughout the educational landscape including K-12 programs, community colleges and university settings around the world (Chan, 2012). With experiential learning projects, students are able to visualize the application of course concepts to real world situations and to experience the benefit of their knowledge and skills applied outside the classroom setting.

In 2006, The Royal Academy of Engineering commissioned a study of skill requirements needed by U. K. engineering graduates. From the analysis of over 400 respondents, the researchers found that engineering graduates needed "...technical expertise with practical ability, backed up by strong interpersonal skills..." (Spinks, Silburn, Birchall, 2006: 59). Another study identified project-based learning as a teaching method that would better develop

"a capability set including personal and professional development, sustainability, problem solving and decision-making, technical competence (engineering analysis, teamwork & leadership and communication" (Jollands, Hadgraft, Ward, & Grundy, 2005:167)

Experiential learning projects often generate benefits beyond the confines of a single course. In some instances, student projects turn into temporary project implementation jobs or open a door for an internship or part time employment with the client. Students may also be able to use community clients as references or include the project on their resumes.

Sigmon (1979) noted the "reciprocal" nature of experiential learning projects for the student and university as well as the clients. Such projects are capable of generating goodwill for the university (and the client) within the community, promoting the client's name to the campus community, and hopefully gaining insights into the thoughts and opinions of potential customers.

The next section describes experiential learning projects implemented in two different online courses at the authors' institution. The authors describe the projects and the additional steps that they incorporated to accommodate the online learning environment. Several of the steps correspond to Elbeik & Thomas' project management model to facilitate team development, improve communication, assist with implementation and control, as well as finalize the project and review.

3. COURSES

Some of the tasks listed under best practices play a role in preparing the class syllabus. Quite a few of the best practices can be applied in the selection and execution of major assessments that are formulated as experiential learning projects.

This paper examines the application of experiential learning projects in two graduate-level courses offered online to students at the authors' institution. The following section describes the two courses as well as accommodations that were made to address the online teaching environments and encourage project success.

Integrated Decision Support Systems

Integrated Decision Support Systems (BA630) is a core course required of all MBA students at the

authors' institution. The course covers a variety of MIS topics including IT purchasing decisions, infrastructure decisions, project management, change management, data mining, and systems analysis and design concepts. Experiential learning projects have been utilized in both face-to-face and online versions of the course. When community clients have not been found, similar projects are used with written descriptions replacing the interview process.

Group Formation

The face-to-face version of the course is taught in a three hour time block one night a week over the sixteen week semester. The average number of students in the class each semester is approximately 32. During the first week of the semester, students are asked to create groups, for the first project, after an interview-type ice breaker followed by one minute introductions of each member to the class. The face-to-face students are allowed to create their own groups. This approach works well most semesters.

The online version of the course is usually taught over a six-week period during the summer. The same topics and number of exercises are taught as in the face-to-face version. Because the course is taught over an abbreviated time frame, the instructor forms the groups for the first project by noon on the second day of class. Students are asked to introduce themselves to the class using a forum and to complete a personal evaluation of their IT skills by the end of the first day of the semester. The instructor then uses the collected data to form the groups.

Besides questions oriented toward skills associated with the programs to be covered and IT skills in general, the personal evaluation asks for undergraduate major, current employment status, and residency during the course of the semester. Depending upon the make-up of the class, groups are formed, for the most part, based upon the following criteria:

- One person who is located in an international country
- One person who is local and can visit the client and can stop by the instructor's office to ask questions if needed
- One person who is in a different time zone than the college
- One person who has had the instructor before
- One person with significant IT skills/experience

Depending upon the size of the class, the groups are usually limited to three or four students. Thus, students may meet multiple criteria. Based upon the students enrolled in the class, if the instructor is able to easily address the basic criteria, other factors are considered as well. The instructor also tries to group people with similar work ethics as well as career goals, if known. For instance, a younger student hoping to work in the accounting field may be teamed with a student who is currently an accountant to help the younger student network. Remote students who live relatively close to each other are also sometimes placed in the same group in case they wish to work on something together.

There are only two group projects assigned in the six week online course, one assigned during the first week and due by the middle of the semester. One assigned in the middle of the course with a due date closer toward the end of the semester. The first project is a small group project requiring the use of Google Drive and Google Hangouts. Additional tools are suggested such as Trello (project management) and Doodle (meeting scheduler).

MBA Group Project 1

The purpose of the project is to familiarize students with online collaboration tools and to help students get to know each other through working on a small project. This is similar to what was noted in a survey of over 100 respondents who attributed the success of an e-Research project to "...the precedent of trust and respect that had been built by working on prior projects together." (Lawrence, 2006: 392)

The project is written to be completed, for the most part, individually but requiring students to be responsible for different elements and to work together for the submission of the project as a whole. For instance, one person is to take the role of project leader and be responsible for overseeing that the project gets completed and that a folder is created in Google Drive for sharing work. Each of the other students in the group was responsible for creating and overseeing one file to be created in the shared drive. The student groups are asked to create two small word processed documents, one spreadsheet and one presentation. Each group member is asked to research a technology based upon a specific theme and contribute information about their technology to the shared files. The group is also required to meet using Google Hangouts and then write about the experience in one of the word processed documents. The students must evaluate their

group members' performance at the end of the project through a group member evaluation form.

The face-to-face course has a similar project in order to facilitate online collaborative work. Although the students are strongly encouraged to meet completely online, they often complete part of their work face-to-face.

MBA Group Project 2

In the following section, the description of Project 2 is applied to the Elbeik and Thomas' Project Management model (1998).

Teams: Students are allowed to select their own groups for the second group project. However, they must abide by the time zone criteria as described in 3. 1. 1 Group Formation unless approved by the instructor. (The MBA program attracts students from around the world. The time zone criterion is required to prevent significantly varied time zones across groups.) Over the past ten years in which the course has been offered online, most groups have maintained the same membership as assigned for Project 1.

Student groups usually start the second group project a little more rapidly than they started the first project. The second project requires students to work through the system analysis and design process for a community client experiential learning project, when available, or a case study when real clients cannot be found. Most projects focus upon the development of a database; however, during one semester, the project centered on the development of a web site for the community client.

Define: Project descriptions are provided with depth and great detail. Instructional notes and video tutorials have been developed to assist students with unfamiliar materials.

Communication: Most communication among group members takes place via email, text messages, phone, and Facebook. However, more students used Google Hangouts for communicating during the summer 2014 semester than in previous semesters. In addition, most groups used Google Drive for sharing their work; however some used Microsoft's One Drive or Dropbox.

Control: One group member operated as the project manager and took responsibility for overseeing the project, maintaining communication, and seeing that the assignment

was submitted on time. The local group member worked on behalf of the group with any meetings that had to be handled face-to-face with the client or obtaining assignment clarification or assistance from the instructor.

Exit and Review: At the end of the project, students are asked to evaluate their team members' performance in the group. If groups have problems, the students are asked for additional detail. On the final test, students are given an essay question in which they describe something that they learned in class that they can apply as future managers. Although they are not specifically asked to focus upon the systems analysis and design project, most of the essay answers describe something that they learned from the project, most often oriented toward project management.

As indicated in the literature review and the project management model, communication is key. Those groups that communicated well were usually very successful in their projects and satisfied with their group work. Some even carried their relationships on to other classes and class projects. Those groups that communicated poorly, and/or lacked strong team leadership, usually performed poorly on the project or the work fell on the shoulders of only one or two members.

Information System Management (ISM)

In this section, we present the analysis for an experiential learning project in a 500-level course that is open to both undergraduate and graduate level students. The Information System Strategy and Management (IS575) course is offered as an elective to both Computer Information Systems undergraduate majors as well as graduate level MBA students. To obtain graduate level credit, the graduate students are required to write an additional term paper (strategic planning report for an organization).

The course has normally been offered in a face-to-face format. However, during the spring 2014 semester, the course was offered online. The majority of the weekly course work centers around topic based research and analysis reports. However, there is one larger project, a consultancy report, in which students work with community clients. This project will be the focus of the next section.

ISM Project 1

Define: In the consultancy report, students examine the IT department and IT services

provided in an organization, either on campus or of their choosing. They are then asked to write a paper describing the organization's IT infrastructure including: hardware, software, networking, security measures, customer support, and IT department management structure.

Teams: The students are allowed to work as individuals or to work in teams of two or three. Most remote students work individually which loses the team project aspect.

Plan: Undergraduate students located on campus are asked to utilize one of the on campus departments for their consultancy report. Students living a distance from campus are asked to use one of their connections for finding a community client.

Controls: One of the problems that the instructor ran into with the project was the lack of control. When the course was taught in a face-to-face format, the instructor would accompany the teams to their first meetings with the clients and guide the students during further work.

Communication: Because the instructor was unable to provide intermediary guidance during the project and the clients were scattered across the country, the instructor was unsure of the actual amount of communication that took place between the students and community clients.

Exit and Review: Peer evaluations were used to evaluate student performance. However, minimal detail was provided by most groups to warrant sufficient evaluations.

In examining the two courses, the authors discovered some project management practices that were used, or should be used, in both courses that can be applied to future online experiential learning projects. These best practices are suggested in addition to those provided in the literature.

4. BEST PRACTICES APPLIED TO ONLINE COURSES

As indicated in the literature review, there are a number of journal articles that describe best practices for teaching online. Here we use the project management framework (discussed in Section 2), to illustrate the application of best practices the authors encountered (Section 2) in their courses.

Define – Course

Course syllabus and policies: To encourage students to read the course syllabus and policy statement as well as familiarize themselves with the online course structure and testing tool, a short quiz over the material was offered on the first day of class. Students could take the quiz up to five times in order to receive a perfect score. Questions focused upon instructor response time during the week, on weekends, and over holidays, locations of help resources, and cheating.

Detailed assignments: Copious details are provided in assignment descriptions to minimize the number of questions and to encourage consistency of work across groups.

Video Tutorials: Instructions and video tutorials are provided for applications and tools to be used during the course of the project.

Plan - Time Management

Military time and consistent deadlines: Military time should be used for deadlines to prevent confusion. Due dates and times should be consistent for project types to help students intuitively know the deadlines. For instance, in the authors' courses, tests were always started on Tuesdays at 8:00 a. m. and closed on Thursdays at 8:00 a. m. , forums were always closed at 23:55 p. m. , and the same for homework assignments and big projects.

Communication - Frequent Communication in Multiple Formats

Frequently Asked Questions (FAQs): FAQs were created for each assignment as well as the course in general. Students were encouraged to post general assignment questions to the appropriate FAQ for everyone to see. Questions specific to the students' particular situation were asked to be sent directly to the instructor via email, text, or voice. To further encourage the use of the FAQs, a response would be posted to the FAQ and then an email would be sent out to the students notifying them of the FAQ question and response.

Weekly Overviews: Each week began with a weekly overview discussing the previous week's graded assignments (including top scores and examples of high quality work) and outlining the homework being assigned that week. Reminders for exercises that had already been assigned, and were not yet due, were also included. For the assignments coming due that week, an estimated date and time for grading completion was also provided. Additional buffer

time was always included in the grading deadline estimate so that the instructor could meet the self-imposed deadline.

Communication for the start of the week:

When possible, the Weekly Overviews were made available on the Friday prior to the start of the week. Once the Weekly Overview was posted, the students were sent an email notifying them that the next week's class was available online if they wished to get an early start.

Grading deadline communication:

Once the assignment deadline passed, the students were sent an email reminding them when the instructor expected to have the grading completed. If grading was completed early, the instructor would post the grades and notify the students. If it looked like the grading deadline would not be met, the instructor would notify the students in advance of the grading deadline and provide an updated grading deadline estimate. Sticking with deadlines and keeping the students informed practically eliminated communication about deadlines.

Communication of progress:

Once the grading of a test or project is completed, the instructor would send an email to the students notifying them that the project had been graded, the gradebook had been updated, where to find the grading feedback, as well as a breakdown of the top scores for the assignment. If the assignment was a forum, the students were encouraged to read particular forums and asked to note specific elements to improve their future work. Letting the students know the top scores and giving them an idea of high quality work has seemed to lessen complaints about grading.

Team Building and Motivation

Group formation: The process for forming groups, as described in section 3 Group Formation, has been utilized for several years in the MBA course and resulted in very successful groups. The authors have considered applying a similar process to face-to-face projects.

Bonus points: Small bonus points were awarded from the start of the class to reward students for exceptional work and extra effort. Students were also made aware at the beginning of the class that bonus points would be awarded for work that went above and beyond the assignments requirements. The instructor has found that the overall quality of course work improves with the early awarding of bonus points.

Controls

Specified clients: Utilizing groups with a mix of local and remote students allowed the instructor to work with a local client on a specific project. This also provided the instructor with control over the quality of the projects as well as interactions with the community client.

Peer evaluations: A detailed peer evaluation form was assigned at the same time as the group project. Knowing that they would be evaluated for their performance in the group seemed to encourage group participation for some of the students.

5. CONCLUSION

In this paper, we discussed the best practices for online teaching and the value of strong communication. Literature regarding the value of experiential learning projects and the application of a project management model to enhance online courses and experiential learning projects were also provided. As the authors implement more experiential learning projects in online courses and utilize more social media tools to enhance communication, new ideas for improving the classroom setting will arise. Project management models provide a framework for classifying and examining these ideas to determine how they can best be applied to projects and the course in general.

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