

## **Teaching Construction Project Management On-line: A Case Study**

**Wafeek Samuel Wahby, Ph.D., B.Th.**

**Professor, Industrial Technology Program Coordinator  
Eastern Illinois University, Charleston, Illinois**

### Abstract:

The author transferred one of the courses he teaches at Eastern Illinois University, School of Technology, into a web course for Internet delivery on-line. The course is entitled "Construction Project Management." This paper compares on-line delivery mode to the traditional face-to-face (F2F) mode and summarizes the steps taken by the author to accomplish this task from start to finish. It includes pedagogical concepts, creating a user friendly web site, difficulties faced and how they were dealt with, system requirements, software utilized, Web Communication Tools "WebCT" application, technical assistance, building a community of learners, course maintenance, assessment and evaluation of the students, and particular on-line applications to a traditionally categorized hands-on Construction Project Management course.

Index Terms: Distance learning, On-line education, Pedagogy, Web Communication Tools "WebCT".

### Introduction

The road for on-line, or cyber space education opportunities is paved and wide open through the booming computer industry that keeps revolutionizing communication possibilities and information availability, coupled with various daily life pressures on traditional as well as non-traditional students.

For instructors, converting a traditionally taught course into an online course is both an opportunity and a challenge. This could make or break the educational experience of both the students and the instructor. The new delivery method is different and dictates a pedagogical evaluation of the traditional face-to-face (F2F) techniques and course materials. Incorporating the best lectures/exercises/activities from a traditional classroom must be examined and adapted to a different delivery modality. <sup>(4)</sup>

Sharing ideas, suggestions, considerations, and experiences in converting traditionally taught courses into online versions is very important to create a pool of information and common body of knowledge that enriches all involved.

The author participated in several workshops and seminars and also received technical assistance locally that helped him transfer one of the courses he teaches at Eastern Illinois University, School of Technology, into a web course for Internet delivery on-line. The course is titled “Construction Project Management”.<sup>(3)</sup>

This paper compares on-line delivery mode to the traditional F2F and summarizes the steps taken by the author to accomplish this task from start to finish, including pedagogical concepts, creating a user friendly web site, difficulties faced and how they were dealt with, system requirements, software utilized, Web Communication Tools “WebCT” application, technical assistance, course maintenance, building a community of learners, assessment and evaluation of the students, and particular on-line applications to a traditionally categorized hands-on Construction Project Management course.

### On Line Delivery Mode versus Face-to-Face (F2F)

Addressing the differences in the online course format as opposed to the traditional F2F class format is the first and one of the most important building blocks of the process. Reevaluating the pedagogical aspects of the course to meet the needs of the online learners is a necessary beginning step. Excellent lecture notes and PowerPoint presentations in the traditional F2F format simply placed online may not generate similar outcomes. Further, face-to-face course material in themselves cannot replace or impart the motivation and stimulation that the instructor’s “presence” conveys to the traditional class.

Since most course contact in the on-line delivery modality is written, proper knowledge and practice of “netiquette” is important. Netiquette includes the ethics and the do’s and don’ts of on-line communication. An assignment that online students should have the first week of the course is to have access to netiquette resource sites that provide instructions on how to communicate in the online world. There might be need to refer to this aspect throughout the semester if a student fails to comply with netiquette rules in their online correspondence.

### Creating a User Friendly Web Site

It is extremely important to have a user-friendly web site. Students should be able to access course information in no more than two clicks. Files were developed once, but linked several times within the course web site. KISS: “*Keep it Simple and Short*” is a good guide when deciding what to include per page of bells and whistles, configuration, features, navigation routs, colors, animations, and even the amount of information. Each link must be checked to make sure it takes students to where it indicates, and each button or icon should be checked to see it does what it is supposed to do. In particular, links to web sites other than local ones must be updated periodically to make sure they still exist.

### Technical Assistance

The technological skills of the student and instructor are components that will also make or break an online course. It is extremely important that the faculty member have basic

computer skills, besides—of course—their excellent interpersonal communication skills. Obviously, these skills must be supported through having technical assistance in the development and maintenance of the online course.<sup>(1)</sup> Likewise, the student must also have basic computer skills while being granted access to technical assistance relevant to the course. For example, students must have a phone number to call or an e-mail address to contact if they need help with WebCT, their e-mail account, or university departments such as registration, library, and records.

### Pedagogical Concepts:

#### Communication:

Online learning requires an active learning pedagogy. Determining how the instructor will communicate with the students in the online environment is an important factor in active learning and towards the success of the online course. It is through effective communication that the course community is built and sustained.

Faculty feedback must be prompt and clear. In addition, it is important that the faculty member plainly states when the student should expect a reply, such as “within 48 hours.” This practice helps calm students’ anxiety. Further, faculty needs to establish when students should expect grades to be posted in the grade book. For example, if assignments are due on Sunday evening, grades for the previous week should be posted by the following Wednesday. It must be noted that if grades are posted prior to the stated criteria during the first few weeks of class, students will expect that rapid feedback every week.

#### Synchronous versus Asynchronous:

The instructor must first determine whether synchronous, asynchronous, or both approaches will be used in the course. Definite advantages and disadvantages exist for each method of communication. The synchronous method may help create student interactivity because it allows the faculty and student to enjoy real time contact and feedback. The disadvantage of this method is the timing of the connection to balance time zone differences. Also, it is often noted in cyber group discussions that the fastest “typist” controls the interaction. The asynchronous method offers maximum flexibility for both the instructor and learner, because it allows for time zone differences, unrushed thought process for writing responses, gender anonymity (if desired), and lifestyle considerations.

The preference for the course discussed in this case study is the asynchronous method that allows the “class time is anytime” concept. The course is set up on a weekly format. The course work and discussions for the weekly topic are opened at 8:00 a.m. Central Standard Time (CST) on Monday of that week and closed at 10:00 p.m. CST on the following Sunday. Students may not jump ahead into the next week’s discussions or course work. This course design encourages the students in the same class stay on the same topic within that time frame and helps them with time management issues. It is hoped that comprehension is increased by guiding the students in the weekly format.

Students may access the Syllabus, Schedule, Assignments, Quizzes, Frequently Asked Questions (FAQ), Discussions, and Resources for the course at any time through the course web site. Assignments for a particular week are due on Sunday at 10:00 p.m. CST (Central Standard Time) to accommodate non-traditional students.

#### Before Starting:

Getting the student started in the online course is critical. Passing a carefully designed crash course on how to study on-line can be a great help in this regard. In addition, an introductory letter and possibly a training session are considerations for achieving this goal. However, requiring attendance for a training session could pose a problem for enrolled students who live at a distance from the university, and simply defeats the purpose and the setting of an on-line, “distant” learning experience.

The method used in this course is an introductory letter e-mailed approximately one week prior to the beginning of the course to each student enrolled. Vital information to include in the letter should state the necessary requirements such as: being self motivated; having the ability to work independently; being comfortable using a computer, having working knowledge of e-mail, web, word processors, and graphical presentation software; and having a reliable Internet provider and a computer with adequate modem/ DSL/satellite meeting system requirements. Software requirements that should also be stated comprise having at least Office 97(including Word, PowerPoint), Web Browser 4.0 or higher, and a reliable e-mail program. Hardware requirements should include minimum computer and modem speeds specific to the course.

One of the first activities the student will complete is taking an online readiness test and personality index test to assess their ability to succeed in an online course. Students should not enroll in a web course with the intentions or hopes of using it to become more technologically oriented. Conversely, they must possess the technological skills beforehand so that they can focus on the course content rather than on how the course is being delivered. Navigating the course web site and/or student management tool, such as WebCT or Blackboard, prior to starting the course is paramount for students’ success.

#### A Community of Learners:

Building a sense of community during the first week of the course provides a critical and solid foundation for the success of the course. A threaded discussion can be very effective in accomplishing this task. This course incorporated a “Tell Us About You” threaded discussion assignment to allow students interact and share personal information they were comfortable with such as hometown, major, work experience, background, and other information or photo(s) they would like to include. Also, this assignment has them state one objective they would like to achieve in the course during this semester.

To have the best discussions online, the instructor needs to establish concrete discussion criteria. The discussion criteria should include parameters such as, time and date deadlines of participation, length of response (e.g.; four to six sentences), content,

grammar, spelling, minimum number of responses to other students, complying with netiquette rules in online correspondence, and American Psychological Association (APA) citations when necessary to support or defend a topic. The tighter or stricter the discussion criteria, the better the discussion outcome will be.

Discussion should be adequately weighed (e.g.; at least 15% of the total grade) to guarantee student participation. Typically, the online threaded discussion can achieve students' participation 100% of the time. <sup>(2)</sup> This is a dramatic improvement over the F2F course format, where minimum participation is characteristic. Faculty and students should expect an intensive amount of online communication which includes reading, electronic writing and corresponding several times each week. Meanwhile, faculty needs to be an observer in the discussion and determine when to give input and what kind of input is adequate.

#### Assessment and Evaluation of Students:

Most of the assessment for an online course should be driven from the exams, tests, quizzes, written reports. However, discussion and project based assignments may have a greater value in assessment, rather than other instruments such as tests, since they show what students really know or come to learn from the on-line course. When testing in the online environment, essay, short answer, matching, formula oriented, and typical multiple choice questions are used.

A non-threatening starter activity used to introduce the testing tool is a bonus quiz over the course syllabus, schedule, assignment due dates and times, instructor contact information, discussion criteria, netiquette, resources, and FAQ. The student enjoys starting the semester with extra points while also learning what it will be like taking a test online. This activity also helps the faculty member know whether their students adequately acquired the necessary information about the course.

#### Academic Dishonesty:

It should be mentioned that academic dishonesty, unfortunately, occurs in the online format as with all F2F courses and is an issue to wisely and promptly deal with. Rules in this regard must be clearly stated from start, and enforcing them must be done in such a gentle but firm manner that aims and strives to build up a better student and a superior citizen.

#### On-line Applications to a Traditionally Categorized Hands-on Course:

A Construction Project Management course is often described as a hands-on course that utilizes a lot of people and experience from the construction industry. To serve the hands-on aspect of the course, on-line students are asked to perform specific activities that are based on assigned text readings, on-line discussions, and "lecture" notes. These activities aim at sending students to the field and bringing the experience of industry experts into the on-line class. Assignments also include case studies and real-life problems concerning

bidding, contracting, identifying various responsibilities of different construction project participants, quantity estimating, planning, budgeting, scheduling, procurement, risk management, and safety. Below are samples of these assignments:

Assignment # 1: Identify a new construction project in your community and describe it as for its purpose, size, location, and the trades that are presently working there as well as the specific work currently underway for each trade. Decide which sector the project falls within, and defend your reasoning. What differences would you expect to see among projects from different sectors? Is the job union or nonunion? Is it funded privately or publicly? Include at least one photo of the project. Log on to your WebCT desktop. Click on the Class Discussion icon. Click on the Week 2 topic area. Post your findings and photo(s) in the Week #1 topic discussion area. To answer these questions with the information you obtained, press Reply. Type in your responses, attach your photo(s), and press Preview. Check for spelling, grammar, netiquette and completeness of your answer. If there are no editing changes, press Post. Review other students' postings to this topic area and respond to at least one of them. Your response should be at least 4 - 6 sentences. You may ask other student(s) any questions along with your 4 - 6 sentence response.

Assignment # 2: Contact three different individuals in your area who are related to the construction industry. Ask each one to: 1) Describe his or her job, 2) Explain their training, and 3) Indicate required certifications or registrations. Include photo(s) of the person being interviewed at their place of work or the work being completed by the individual. Log on to your WebCT desktop. Click on the Class Discussion icon. Click on the Week 2 topic area. To complete this assignment, press Reply. Type in your response, attach your photo(s), and press Preview. Review your response for spelling, grammar, netiquette, and completeness. If there are no editing changes, press Post. Review other students' postings to this topic area and respond to at least one of them. Your response should be at least 4 - 6 sentences. You may ask other student(s) any questions along with your 4 - 6 sentence response.

Assignment # 3: Watch the posted video interview with Mr. Les Dallas, owner LD Mechanical Contractors, Inc. This interview spans four segments. You will be using the free RealOne player. Consult the FAQ for help with finding and loading the RealOne player. Log on to WebCT and click on Class Discussion. Provide your input on three points he raised about his work that caught your attention regarding construction project management. Also, provide three questions on applying the construction project management concepts you know of, that you would have liked to ask him about. You may not repeat another student's comments or questions. To complete this assignment, press Reply, type your response, and press Preview. Review your response for spelling, grammar, netiquette, and completeness. If there are no editing changes, press Post. Review other students' postings to this topic area and respond to at least one of them. Your response should be at least 4 - 6 sentences. You may ask other student(s) any questions along with your 4 - 6 sentence response.

## Difficulties Encountered

In addition to technology problems and personal time management challenges expected in any on-line class, special difficulties were encountered in this Construction Project Management on-line course such as when some students missed the point in their reports or failed to collect or present some key details. Also, superficial input, poor presentation/analysis of collected data, failure to respond to other students' postings, or failure to respond to them in a timely manner, and non-compliance to netiquette rules are some of the difficulties encountered.

## Conclusion:

The journey and the destination of developing this Construction Project Management on-line class were exciting. Experiences gained for the first time in the process, and then when teaching online have been great! Further, the on-line experience has benefited my other face-to-face F2F traditional classes because I had an opportunity to re-evaluate how I teach and present class materials. I am glad I "Joined the Club!"

## References:

1. Dallas, Lisa; "*WebCT and Tricks of the On-Line Trade!*" A CATS Workshop, Eastern Illinois University, Charleston, Illinois, November 12, 2003.
2. Simpson, Linda; "*On-Line Teaching,*" A TEAM Presentation, Eastern Illinois University, Charleston, Illinois, November 12, 2004.
3. Wahby, Wafeek S.; "*I stopped Surfing and Started Teaching,*" Proceedings, National Conference of South Carolina University, Las Vegas, Nevada, February 12-15, 2003.
4. Wahby, Wafeek S.; "*On-Line Teaching: Join the Club!*" Proceedings, National Association of Industrial Technology (NAIT), 36<sup>th</sup> Annual Convention, Nashville, Tennessee, USA, November 20-22, 2003.

## WAFEEK SAMUEL WAHBY

Dr. Wafeek Samuel Wahby is a professor of construction engineering technology and the Coordinator of the Industrial Technology Program, School of Technology, Eastern Illinois University, Charleston, Illinois. He is the chair of ACI sub-committee on Polymer Concrete Structural Design and Analysis, and chair of the Construction Focus Group of the National Association of Industrial Technology (NAIT). Dr. Wahby offered special technologically/environmentally focused study abroad courses in China and in Egypt. He is planning another course in Brazil.