On-line Learning: One Successful Approach

Scott Wolcott
*Rochester Institute of Technology*

Follow this and additional works at: [https://scholarworks.rit.edu/other](https://scholarworks.rit.edu/other)

**Recommended Citation**

ON-LINE LEARNING: ONE SUCCESSFUL APPROACH

Scott B. Wolcott, P.E.¹

Abstract – As with most things in life, several paths can be taken to reach a goal. This paper will present one approach to developing and managing a successful on-line learning experience for students. Successful on-line courses include the following 5 elements: “know” your students; realize that your primary role is facilitating learning by management, not teaching; use various media for sharing information with the students; use multiple grading opportunities and types; and be responsive - be very responsive to student’s questions. The proof that this approach is successful is five years of student comments - through formal course evaluations and informal e-mails of appreciation. I believe this approach can be applied to traditional on-campus courses, as well.

Index Terms – pedagogy, on-line, distance learning, CIEC, Wolcott

INTRODUCTION

Communication with students is obviously the essential element to good teaching practice. Good communication in on-line learning is made possible by developing a course curriculum that establishes a learning atmosphere which prompts interest and interaction by the students. It isn’t enough to have a sexy topic to discuss, although it helps – a lot. I teach Industrial Wastewater Management, so I need to have a good system.

There are, undoubtedly, many successful systems for building an environment for good communication among students in a distance learning course. This paper offers one methodology that has proven successful for this instructor over the past five years. The components of this system are not always directly related to communication. However, the atmosphere that is created under this system encourages communication between students as well as between instructor and the student. The five components include:

- “know” your students;
- understand that your primary role is facilitating learning by management, not teaching;
- use various media for sharing information with the students;
- use multiple grading opportunities and types; and
- be responsive - be very responsive to student’s questions.

Before each of these components is described, it is important to understand the type of course where it is currently used. The course, Industrial Wastewater Management, is a survey of typical industrial wastewater characteristics, commonly applied treatment processes, and some regulatory and management issues related to the treatment of industrial wastewater. While there is some mathematical usage, approximately 70% - 80% of the course material can be categorized as qualitative rather than quantitative. The distance learning platform used for the course is FirstClass by Softarc.

¹ Associate Professor; Department of Civil Engineering Technology, Environmental Management & Safety at Rochester Institute of Technology

2006 CIEC Conference ETD5b-1 January 31 - February 3, 2006
FIVE COMPONENTS OF DL HAPPINESS

Know Your DL Students

Distance learning (DL) students are a diverse crowd. Sometimes the DL student is a fulltime, college aged student who happened to take a DL course because of a schedule conflict, a preference for DL courses, or is in a co-op/intern program and wants to take an additional course while away from campus. But typically, the DL student is not between the ages of 18 and 24 years old. This student usually has important responsibilities outside the DL classroom such as fulltime employment (sometimes well over 40 hours per week), family, and/or fulfilling his or her duties as a member of the armed services. As such, they are constantly juggling online and at home assignments. In short, they are stretched to their temporal limits.

Not only are individual DL students pressed for time, but as a group, they can be spread over a wide distance. In any given class, US students can be located in all four North American time zones and be stationed overseas in Germany, Guam, Korea, the Middle East, etc... The spatial distribution of the students is an issue that must be recognized to enable students to conduct real time discussion for group activities. In most of these cases, students have reliable infrastructure to support an on-line education.

Not all countries in the world have the level of services that Americans take for granted. DL students from some other countries encounter logistical problems such as intermittent internet connections and the undependable delivery of hard copy course materials which make the distance learning experience very frustrating. In addition, cultural and historical references may be lost on foreign students.

All in all, the make up of a typical DL class is temporally, spatially, and perhaps culturally diverse. The following ideas will accommodate the DL lifestyle and maintain an appropriate level of academics in the DL environment:

- Keep track of where students are living and what their outside time requirements might be. This can be easily and covertly accomplished by requesting students to post a brief paragraph about himself or herself. The instructor can be the first to post an introductory paragraph in order to establish an informal format that includes the state or country of residence.
- Provide a complete and detailed syllabus to the student prior to the beginning of the course. Within the syllabus provide schedules of deadlines and content for quizzes, tests and assignments, if possible. This allows the student to begin planning the next few weeks of their lives.
- NOTE: DL students actually read the syllabus!
- Define expectations and penalties for not meeting deadlines. If there is a time limit for online quizzes and it is exceeded, let the students know what the penalty might be. Don’t let there be any surprises.
- Strongly encourage the student to inform you of potential scheduling conflicts between work/family and academics before the submittal deadline.
- Allow quizzes and tests to be submitted over a period of 3 to 4 days. This gives the DL student enough flexibility to fit your requirements into his or her busy schedule.
- Allow ample time to complete an assignment after it has been assigned. This gives the DL student enough flexibility to fit your requirements into his or her busy schedule, especially if it is a group assignment.
- If group assignments are required, place students that live in the same time zone or at least adjacent time zones in the same group, when possible. This will facilitate real time communication such as conference calls or cyber chats between the students. There will be cases when students do not fall neatly into adjacent time zones. For example, out of a class of 30 students; 28 might live in the 48 contiguous states while the other two students live in Vietnam and Germany. When this occurs – don’t panic, the scheduled, yet flexible course assignment schedule suggested above will make course completion feasible.
- MOST IMPORTANTLY – be flexible to the demands of their schedules. Understand that the typical DL student is a high achiever and really wants to complete all requirements in a timely fashion and get good grades. However, the demands of work and family sometimes cause a conflict. Work with the student to establish an alternative deadline that is reasonable for both parties.
Understand that your Primary Role is Facilitating Learning by Management, not Teaching.

Most on-campus courses have a lecture where instructors are able to teach in the classic sense of the word. It’s an environment where one person is sharing knowledge with a group of students, challenging the students’ understanding of the material by posing questions, and responding to students’ questions all in real time. This isn’t the normal setting in DL courses.

In the DL environment, instructors share knowledge by providing information or directing students to a source of information. The instructor should be confident that the information is sufficient to provide students with fundamental understanding of the topic. This base of information can then be applied and truly learned by the student during individual and/or group assignments. The completion of assignments should require more than simple parroting of the information the instructor/manager provided. The students should be able to use the initial sources of information to discover additional breadth and depth in a subject area. When the student becomes confused or has questions, the instructor/manager must be available to answer via e-mail or telephone. The instructor can also take an active role eliciting questions from students by visiting online chats. If there are an abundance of questions, then the information initially provided is probably insufficient or the assignment lacks clarity. Then, the instructor/manager must be willing to contribute additional direction.

Being a good manager and teacher is more than telling people what to do. A good manager is well organized and in frequent communication with his or her constituents.

Use Various Media for Sharing Information

Using one or two texts as the sole source of information for a course is monotonous. In most cases the students will read what is required, finish the assignment and move on to the next task at hand. By using different types of media for informational sources, opportunities arise for students to learn things that are beyond the original intent of the assignment. In addition, students have different styles and abilities for assimilating information and concepts. For example, students who are not strong readers or have difficulty maintaining their concentration during lengthy reading assignments may be able to learn the course material from videos.

I use a text for Industrial Wastewater Management. In addition the students are required to view commercially produced videos that visit industrial sites and wastewater treatment plants. The videos reinforce the information provided in the text and show actual wastewater treatment plants in operation. Site visits aren’t realistically possible in the DL format. Supplemental material from sections of texts is provided as are notes authored by this instructor.

The internet also provides a vast amount of information that a student can use to go beyond the basic course requirements. I find that students use the internet to its greatest potential when assigned open-ended tasks. It becomes a valuable research tool.

Use Multiple Grading Opportunities and Types

The use of multiple grading opportunities and types helps students in two ways. First, students who are not able to effectively express their knowledge using one assessment tool might be able to do better with another type. For example, some people have difficulty with timed examinations (quizzes or tests). However, the same student might be an excellent leader, researcher, and writer. This type of student might be able to improve exam scores through submitting assignments of high quality. Multiple grading opportunities allow for a more accurate assessment of a student’s skills and understanding of the course material.

Second, most students will turn in a sub-par performance at one time or another due to circumstances beyond their control (i.e work and home). In a course with only 2 or 3 graded assessments; one bad effort could eliminate a chance at an A or even a B.
Industrial Wastewater Management, which is taught in a 10 week quarter system, uses the following assessment tools:

- 9 weekly quizzes with a 20 minute time limit. (30% of the course grade).
  - Students like the regular schedule of manageable sized readings to prepare for the quiz. It doesn’t overwhelm them in their busy schedules. The students are also given a 5 day period to submit the quiz in a drop box. The quizzes are open book and open notes. A proctor isn’t required which would add another level of coordination on my and the students’ part. Quiz questions are changed from year to year on most quizzes.
  - All questions are qualitative in nature and a mixture of true/false, multiple choice and short answer.
  - There IS significant communication regarding the time limit. A few students will complain that 20 minutes is too little time. I respond that an open book and open note timed assessment has to be brief enough to force the student to learn the material before sitting down to take the quiz/test. This communication occurs every year. Usually between me and one or two students. Interestingly, an on-going public and civil e-mail exchange on the philosophical merits of the timed quiz took place last year between a several students. All of them had good arguments either supporting or disagreeing with the timed quiz.

- Assignments. (30% of the course grade).
  - Two to three group assignments are required. I form groups of three to four students in the beginning of the quarter. Since the strengths and weakness of these students are unknown, the groupings are random with some adjustment to address time zone issues. The group assignments are a combination of qualitative and quantitative questions. The assignments have two to four parts which allows for division of labor between the group members. The questions typically can not be answered by only using the course supplied materials and therefore, require significant outside research for information.
  - One or two individual assignments are required and are of a qualitative nature.

- Final Exam. (35% of the course grade).
  - The final exam is open book, open notes and open quizzes. It is not proctored since it is my personal belief to treat people with the trust and respect that I would expect from them. This may be naïve and a minority of students may have cheated in the past by communicating while taking the exam. However, I have never seen evidence of cheating.
  - The final exam is timed, but with significantly more time than the weekly quizzes. The additional time is given because quantitative questions appear on the final exam.
  - The topics that will be covered by the exam are announced in advance to provide sufficient time for the students to prepare.

Be Responsive - Be Very Responsive to Student's Questions

This final element is the key for making a DL course successful. As discussed previously, the typical DL student has important responsibilities in addition to the course that he or she is taking. Their schedule is tight and if they have a question or comment they need and deserve to have it answered. During weekdays, all phone calls and e-mails should be answered within 24 hours. Even during the weekend, instructors can check e-mail from home when feasible. If the students are squeezing in course work during their free time, then an instructor should be willing to give the five to ten minutes that’s required to respond to a question. The students definitely appreciate the attention.
CONCLUSION

The five elements of one successful approach to distance learning instruction are not a guarantee to student happiness, but it’s a good start. The students who have taken Industrial Wastewater Management have expressed appreciation for the structure and pace of the course. Below are sample comments from the formal course evaluations.

- "I liked the way he would come into our chats during group homework assignments to see if we needed help."
- “He replies in less than 24 hours”
- “The group homework assignments were challenging and fun. I enjoyed working with the other students, they taught me a lot too”
- “The Prof was very present throughout the course”
- “Very clear objectives and expectations. No guess work involved. As a student I clearly understood the work and his expectations.”
- “This course was the perfect example of how the materials are best applied to online education.... a well-rounded approach”

I would like to thank the instructors at RIT who shared their course strategies with me as I started in distance learning. I would have floundered without their suggestions and example curricula.