Teaching Online and On-campus Students

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Abstract
To echo the theme of the 2008 IGAEA Conference, “Cruising the Classroom – Innovation for Tomorrow’s Teachers,” the author shares his online experiences in teaching digital imaging and color reproduction. There are several essential factors to the success of online teaching and learning: (1) maturity of computer, Internet, and World Wide Web, (2) friendliness of the academic environment, (3) robustness of online course management system, and (4) ways to enhance learning and interpersonal relationship. When online course management system is applied to on-campus teaching, it is called blended learning. The author also discusses a recent survey of faculty opinions on blended learning at Rochester Institute of Technology and his own experiences in teaching a printing technology course both online and on-campus.

Introduction
I was hired to teach at Rochester Institute of Technology in 1980 because I was a subject expert, not because I knew how to teach. The good thing is that I like teaching. I eventually learned how to teach after many years of classroom experiences.

Teaching involves designing or revising a curriculum, preparing or updating instructional materials, and communicating with students in classroom and in laboratory. In a sense, the classroom is where most of teaching and learning take place. At the end of a term, I have the opportunity to assess what works and what does not. I would make necessary curricular revision before starting over again.

I have been teaching color imaging and its reproduction for many years. Imaging and prepress side of the graphic arts technology moved from film-base media to digital media in early 1990s. I adopted computer-based color imaging tools in order to keep curriculum current. I became proficient with computers and a variety of application software packages.

As computer hardware and software continued to improve plus the availability of Internet technology, information dissemination and retrieval became ubiquitous. This made online or distance learning possible. Students can take courses outside of traditional classrooms anytime and anywhere. Likewise, teachers can instruct their students anywhere and at anytime. The virtual classroom that removes the constraints of place and time motivated me. I taught my first online course, Imaging Technology, in 1998.

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Objectives
The theme of the 2008 International Graphic Arts Educator Association (IGAEA) Conference is “Cruising the Classroom – Innovation for Tomorrow’s Teachers.” It is fitting that I describe my experience in cruising the classroom via the Internet. First, I will outline important factors in order for online instruction to work. Second, I will discuss the use of online course management system for on-campus teaching. I will also discuss correlations between online learning and on-campus learning ascertained from student feedback.

Teaching Online Students
I asked myself what are the criteria for successful online instruction. I came up with the following four crucial factors: (1) maturity of computer, Internet, and World Wide Web (WWW); (2) friendliness of the academic environment; (3) robustness of online course management system; and (4) ways to enhance learning and interpersonal relationship as individuals and teams. Below are elaborations of these factors.

1. Maturity of Computer, Internet, and WWW
   As we witnessed vast changes in computer operating system, chips, memory, and speed in the past twenty years, Moore’s Law stands correct, i.e., “the number of components the industry would be able to place on a computer chip would double every two years” (Intel, 2008). I encountered replacement of my computers just about every three years to keep up with the pace of the advancement in computer technology.

   The Internet is a collection of interconnected computer networks, linked by copper wires, fiber-optic cables, wireless connections, etc. In contrast, the World Wide Web (Web) is a collection of interconnected documents, linked by hyperlinks. The Web is one of the services accessible via the Internet, along with various others including e-mail, file sharing, etc. (Wikipedia, 2008). Like cars and airplanes that shaped the transportation industry, it is the speed of the computer and the ease of moving data with the use of Inter-based browser that made online instruction possible.

2. Friendliness of the Academic Environment
   From university point of view, online teaching has the potential to increase student enrollment without increasing physical resources of the institution. RIT is a technology astute institution. It created the Online Learning unit to support a number of online degree programs available to off-campus students.

   My involvement in online teaching was the result of the School of Print Media offering a digital imaging certificate to non-matriculated students. I received instructional supports from RIT Online Learning. I also received released time to develop digital assets to support the online course. I included online curriculum development activities as merits in my annual faculty review. Thus, I have a very friendly academic environment that fostered my ability to teach online courses. Without the friendliness of the overall academic environment and the support of my school’s administration, I would not have embraced online technology the way I did.

3. Robustness of online course management system
   An online course management system is a virtual classroom where instructional materials, communication, quizzes, tests, drop box, and grade book are organized and accessed by
registered students and the instructor. myCourses (term coined by RIT), is an icon-based Internet browser (Figure 1). The current Web-based platform was developed by Desire2Learn Inc. It is the fourth online course management system I have used since 1998 after FirstClass, Blackboard, and Prometheus.

At a quick glance, myCourses is structured, explicit, and text-based. When listening to liberal art and social science faculty members at faculty online workshops, I found that faculty members are satisfied with text-based “teaching presence.” Teaching presence is defined as “the design, facilitation, and direction of cognitive and social processes for the purpose of realizing educational outcomes” (Garrison, et al, 2001). A good example of text-based interaction is threaded discussion.

I found text-based interactions limited in teaching presence and demanded image-based communication including sight and sound. When computer and Internet speed were slow, I would record lectures in a studio, add captioning, and package them as VHS tapes that were available to students. As the Internet speed improved, videotaped lectures were replaced by streaming videos. Students access these lectures via hyperlinks. When watching videotaped lectures, students could rewind me in the middle of a lecture as if they had asked a question, “What did you just say?” They can view the entire lecture again to achieve deeper understanding of the subject.

Good planning is key to online teaching and digital assets preparation. It would take me more than 10 weeks to record all the lectures in a 10-week course. Initially, it was necessary to re-record two to three lectures due mostly to content changes. I learned to only include theory and conceptual aspects of instructional materials in videotaped lectures and keep time-limited materials, e.g., software features, in laboratory assignments.

A virtual classroom with streaming video may be as good as a traditional classroom in disseminating lecture-based information. But transforming hands-on learning from a real laboratory to a virtual laboratory falls short. A case in point is the Color Management System Lab in the School of Print Media. It has many state-of-the-art color measurement
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Instruments and color management system software. As an instructor, I cannot demand students spend a huge sum of money to purchase these highly specialized hardware and software. The best I can do is to provide videotaped demonstrations on the use of a spectrophotometer for data collection and on the construction of ICC profiles. I, then, upload the resulting files on the server for students to carry out the rest of the laboratory assignment. Students often commented that demonstration did not match hands-on learning.

Under the Content header of myCourses, I organize instructional materials by week (Figure 2). Students can download lecture outlines and lab instructions as PDF, see the reading assignment, view videotaped lectures via RealPlayer, and take self-quizzes or tests online.

Routine communication takes place in a number of touch points. Weekly Announcement is the first thing students would see when entering the myCourses. I use email to handle personal matters. I usually lead in the open threaded discussions by prompting a few thought-provoking questions relevant to the subject matters studied. Students were asked to respond to these questions. I would monitor various discussion threads, comment or praise their postings. As a personal reflection, threaded discussion is like a “life line” to online students. This is where they exercise critical thinking and problem solving. Outcome of the discussion often were used in the essay part of online tests.

Online technologies mentioned thus far, support asynchronous communication. Yet, there was a strong desire on the part of online students to have more contact with the instructor in a synchronous manner, i.e., same time, anywhere. I conducted text-based chat sessions, voice-based telephone conferencing, and most recently, web conferencing using Adobe Connect. When there is a hearing-impaired student enrolled in the class, RIT mandates that text-based captioning be included in the session.

Private group discussion areas are set up to support group projects. Why group projects? A group project helps create synergy and collaboration among a team of learners. However, group dynamic has been a variable and cannot be assumed. I would survey the students at the beginning of a term, group them as teams of two or three based on a few self-rated criteria, i.e., ability to write, ability of lead, ability to use software for documentation, calculation, and image processing. Only one score is given to a team report. A student has
the right to back out of a team and acts individually in completing his/her lab assignments. My experience has been that the quality of the group report is usually higher than that of individual report. Indeed, it is rewarding to read a lesser number of reports and higher quality reports at the same time.

Behind the Quizzes heading of myCourses, the course management system offers a very powerful test bank (Figure 3). I spent numerous hours to enter multiple-choice and essay questions via the browser window. From there, I used the random feature to create self-quizzes and make them available to students. Students were encouraged to take no-credit bearing quizzes to test their understanding of the subject. Many of these quiz items would show up in a credit-bearing tests with test items also randomized so that no two students receive identical tests.

![Figure 3. Test bank and quizzes](image)

4. **Ways to enhance learning and interpersonal relationship**

In addition to teaching presence, Garrison, et al (2001) also defines “cognitive presence” and “social presence” as criteria for assessing educational values. To me, “cognitive presence” suggests “Things learned” or “I got it!” “Social presence” implies “there is a sense of belonging” or “the opportunity to compare notes” or “I made a difference in my team.”

I have taught Tone and Color Analysis, a required graduate-level course online since 1999. Teaching presence is evident in terms of various media mixes that help build understanding. Social presence is evident in discussion postings both in quality and in quantity. An interesting point is that social presence is based on the concept of “anyplace, anytime.” It has given the freedom to travel to attend conferences without missing my classes.

Cognitive presence is evident from quizzes, tests, lab reports, and teaching survey. To enhance cognitive presence, it is strategic that I encourage students to ask questions and
solicit their responses to open threaded discussion topics. We often made the “Heavy Hitter” list, a faculty recognition program from RIT Online Learning for being a high-volume user of myCourses.

By means of survey of students’ opinion regarding online learning, I discover that (a) there is a correlation between students who asked good questions and their grades. Good questions were content-related, (e.g., can you elaborate more on the concept such and such), and not logistic-related, (e.g., when is the test scheduled, there is a problem with the streaming video); (b) there is a correlation between students who put effort in lab report documentation and their grades. Students learn the course materials best when they understand by doing and not by memorization; and (c) there is a correlation between students who put effort in lab work and high ratings they gave regarding the quality of the course.

Blended Learning

RIT has 1,400 full-time and adjunct faculty members to support 92 undergraduate degrees, 70 graduate degrees, and four doctorate programs with an enrollment of 16,000 students. In the 2005-2006 academic year, 19% of RIT faculty (full-time and adjunct) taught at least one online course. Majority of courses are campus courses are not using the online course management system.

“Blended learning” is about using the online course management system on-campus. RIT envisioned considerable potential in creating educational value and began its blended learning efforts since 2003. One hundred and twenty-four (124) RIT faculty members have taught at least one blended course as part of the blended learning pilot or project since fall 2003.

In winter quarter 2008, 55% of RIT faculty used one or more features of myCourses, e.g., Grades, Content, and/or Discussion, etc. A survey of these faculty members on blended learning was conducted in the spring of 2008. Below are major findings (Starenko, 2008):

1. Regarding faculty satisfaction with blended learning, 46% are very satisfied, 43% are satisfied, 7% are neutral, and 4% are dissatisfied. When asked, “Do you plan to continue blended learning,” 72% responded with “Definitely yes.”

2. Regarding motivation for blended learning, 68% cited flexibility as a motivator; 75% cited the opportunity to use new technology is a motivator; and 96% cited the opportunity for new pedagogy. In particular, the use of threaded discussion has shown significant impact on collaborative learning as well as on the performance of shy or reticent students.

3. Regarding student satisfaction with blended learning, 75% of the respondents indicate that students are very satisfied or satisfied. Students who are dissatisfied with blended learning cited “lack of faculty contact” and “less interaction online” as major causes.

I have attended a number of workshops on blended learning. It gave me an opportunity to hear how other faculty members described their experiences. The above-mentioned survey further solidified blended learning experiences at RIT as a whole.

Teaching On-campus Students

I taught Tone and Color Analysis on campus and online in the School of Print Media. When RIT Online Learning started to promote the use of online course management system on campus in 2003, I jumped in without hesitation.
Having instructional materials converted to digital media is not a requirement in blended learning. Since I have the resources from teaching the course online, I make streamed lectures, lecture outlines, and quizzes available to my campus students. Students have the option to preview or review videotaped lectures at their own pace. I often administered an unannounced quiz at the beginning of a class to test their understanding of previous lecture and to enforce the importance of being punctual in class attendance.

While threaded discussion and private group discussion are very important for online students, this is not the case for on-campus students. Only a small portion of campus students would use the discussion feature in myCourses mostly because I placed a small bonus (5% of the total score) to reward their efforts. The majority of the campus students would not bother with online discussion. I suspect that campus students have the benefit of meeting with the instructor face-to-face for questions and answers. They also prefer direct communication to reach his/her group for team projects in the lab (Figure 4). Using online technology to create group dynamics and collaboration with on-campus students successfully is not happening in my teaching.

Conclusions

Tools and materials used in the traditional classroom are tables, chairs, blackboard, chalk, slide projector, data projector, etc. Tools and materials used in online teaching are computer, Internet, and digital data. The difference between traditional classroom and online classroom is as drastic as the difference between using a map and a GPS for driving direction.

The acceptance of new technologies and services often follow a pattern. The technology adoption pattern has a typical bell-shaped distribution (Rogers, 1995). The first group, known as innovators, accounts for 2.5% of the population, and embraces new technology. The next group, early adopters, accounts for 13.5% of the population, and is followed by the early majority (34%), late majority (34%), and laggards (16%). The recent survey at RIT indicates that 19% of RIT full-time and adjunct faculty taught at least one online course. It is reasonable to conclude that online teaching at RIT is between the early adopters and early majority stage.
Learning to teach online is like parenting, one has to embrace it head on by doing, asking questions, and taking notes in order to feel good about it at the end of the day. While innovators are prepared to put up with bugs and flaws in new technology, early adopters are less tolerant toward these flaws. I considered myself an early adopter of online technology. I like the structured approach to course management. While the technology has bugs and flaws, I keep reminding myself, “Life is great when technology works.”

Online course management system offers text-based discussion and is effective in online learning where students are away from one another. Most campus students meet their classmates daily in class and lab. They do not utilize online discussion postings even there is a bonus offered. They prefer direct communication. Online course management system does offer other benefits, e.g., quizzes, videotaped lectures, to complement on-campus teaching.

References


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Bio

Robert Chung is a professor in the School of Print Media, Rochester Institute of Technology. Bob teaches technical courses in process control, color management, and quality control. He received his B. A. in Industrial Technology from Eastern Washington University in Cheney, Washington in 1972, and his M. S. from RIT in Rochester, New York in 1975. He has published over fifty technical papers. Bob was named the RIT Gravure Research Professor in 2004 with the mandate to develop a gravure research agenda and curriculum to help students understand the gravure process and explore career opportunities in the gravure industry. He is the recipient of the 2007 Educator of the Year Award from the Electronic Document Systems Foundation (EDSF); the 2007 Fedrick D. Kagy Life Achievement Award from the International Graphic Arts Education Association (IGAEA); the 2006 Michael H. Bruno Award from the Technical Association of the Graphic Arts (TAGA); and the 1991 Education Award of Excellence from the Graphic Arts Technical Foundation (GATF). He can be reached at rycppr@rit.edu.