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**Internet Delivery of Instruction:
Issues of Best Teaching Practice, Administrative Hurdles, and Old-Fashioned Politics**

by

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ABSTRACT

This presentation describes the preparation and execution of a statistics and a fine arts course, each of which was offered in parallel to an oncampus classroom group and an online Internet group. The presenters address the pedagogical, administrative, and political issues that must be resolved before one can legitimately offer a course of study to an Internet audience that the instructor will never physically see. Pedagogical issues are paramount if the goal is to achieve best teaching practice. In addition there are numerous administrative hurdles to resolve where admission officers, registrars, and governing boards are working from a traditional mindset where rules and guidelines are based on local geography and physical presence. Further, political issues quickly present themselves including time issues, faculty-colleague and administrator perceptions of "legitimate teaching activity," and valuations of the course.

INTRODUCTION

Offering courses to students online over the Internet is seductively alluring. Think how easily one could drive up FTE by opening class enrollments to anyone through Internet access. Issues of geography drop away and one can solicit students from anywhere in the world for college courses. Reality quickly sets in, however, when one confronts the pedagogical, administrative, and political issues that must be resolved before one can legitimately offer a course of study to an Internet audience that the instructor will never physically see.

This presentation follows our previous work (Chizmar and Williams, 1996) by describing the preparation and execution of a statistics and a fine arts course, each of which was offered in parallel to an oncampus classroom group and an online Internet group. The oncampus students attended class in a traditional setting but had access to the same Internet resources available to the Internet students. The online students were connected solely through Internet services and never met physically with the instructor at any time during the semester. The key Internet technologies used were: email, NetForum (a unique web-based threaded discussion application from the University of Wisconsin-Madison), RealAudio live and archived presentations of the class lectures, and a comprehensive set of web pages that contained discovery "labs" built on an active learning strategy for the statistics course, and supportive materials and visuals coordinated with class presentations for each day for the fine arts course. Desktop video technologies were examined and then abandoned due to bandwidth considerations. We developed parallel research tools that were used to measure the effectiveness of delivery both oncampus and online.

PEDAGOGICAL ISSUES

The first question that must be answered by an instructor who is contemplating teaching an Internet-only course is essentially the same question that must be addressed by an oncampus classroom instructor—what pedagogy should I use? However, an Internet instructor must evaluate potential answers to this question against his/her answer to a second question—will the pedagogy work over the Internet using a variety of Internet delivery techniques, including Web documents? Furthermore, it must be understood that this second question is subordinate to the first. The pedagogy must drive the choices of instructional technology, not the other way around.

In choosing between potential answers to the first question, whether for oncampus courses or Internet courses, we were guided by Chickering and Gamson's (1987) Seven Principles for good teaching practice. Their Seven Principles, which succinctly summarize decades of research on undergraduate teaching and learning, implore teachers to:

1. encourage contacts between students and faculty,
2. develop reciprocity and cooperation among students,
3. use active learning techniques,
4. give prompt feedback,
5. emphasize time on task,
6. communicate high expectations, and
7. respect diverse talents and ways of learning.

We both had extensive experience using the Internet in our oncampus courses. As we contemplated choosing a pedagogy for our Internet courses we found ourselves in agreement with Chickering and Ehrmann's (1996) statement, "If the power of the new [information] technologies is to be fully realized, they should be employed in ways consistent with the Seven Principles." (p. 3) While all seven of Chickering and Gamson's principles are important, we began our pedagogical search from the premise that their dictum to "use active learning techniques" must be considered the first among equals. While it is always superior for instructors to act as a "guide on the side" as opposed to the "sage on the stage," we believe finding an active learning pedagogy is paramount for Internet instruction where, for our environment at least, there are with no visual cues for human interaction.

While many facets of our active learning solutions were similar, fundamentally our basic approaches were different. Chizmar chose an active pedagogy designed to replace "talk" for his Internet-only group; Williams chose an active pedagogy designed to involve his Internet-only students in the "talk" along with his oncampus group.

Statistics Course. Chizmar taught an undergraduate economics statistics course simultaneously to online students who were connected solely through Internet services and to oncampus students in a networked computer

classroom where each student worked on a computer workstation connected to the campus network and the Internet.

The course, Economic Reasoning Using Statistics, was taught to 15 students oncampus and to 16 across the Internet. For both the groups, the level of computer literacy varied greatly, ranging from “techies” to computer novices. For various reasons, the Internet course was restricted to students who were already enrolled in the University.

The statistics course was designed to emulate the premise of an unconventional, NSF-funded statistics course called "Chance." The statistics course aimed to teach statistical reasoning through the study of important current, economic controversies whose understanding required a fundamental knowledge of statistical reasoning.

The statistics course employed a collaborative classroom/laboratory approach as its active learning pedagogy. The classroom/laboratory approach required oncampus and Internet students to collect and produce data, make predictions, read about important news events, discuss findings, analyze data, access the vast array of data available through the Internet, conduct simulations, and write explanations. The teacher’s role was to act as a facilitator—to monitor student progress, ask and answer student questions, lead discussions, and, when necessary, deliver “mini-lectures.” The “mini-lectures” were delivered verbally to the oncampus students and electronically via Web-based tutorials to the Internet students. All of this was accomplished via a course web site using a Web-browser and a statistical software package.

The statistics course, both for the oncampus students and the Internet students, substituted hands-on activities for the lecture. The expository material was broken into a series of “labs”; each lab had its own Web-page linked to the online syllabus. The labs guided students to discover important statistical concepts on their own and challenged students to demonstrate their understanding of statistical issues by posting explanations and interpretations in NetForum.

Considerable time was involved on the instructor's part to create the new Internet teaching materials. In total, the statistics instructor created 42 labs and 21 tutorials to support the statistics course. The labs and tutorials could all be accessed, anywhere, anytime, through the course Web site. Students could retrieve data files that supported the labs (in either MacOS or Windows95 format) by linking to a data files retrieval page using a web-browser’s “MIME type” facility. Students could interact (and, perhaps even collaborate) with each other and with the statistics instructor using NetForum. Students could check each week’s outline and assignments using NetForum. Students could check their grades via the online gradebook. The labs, tutorials, gradebook, and data retrieval site were password protected so that only oncampus and Internet students registered in the course could have access to these materials. Various online resources for the course can be viewed on the Web at the following site:

Course Home Page

< http://138.87.168.39/Jack_Chizmar/ECO131/Eco131home2.html >

Lab 1a: Minimum Wage in New Jersey and Pennsylvania--an Internet Journey

< http://138.87.168.39/Jack_Chizmar/ECO131/DescStat/Lab1a.html>

NetForum Threaded Discussions

< <http://www.ilstu.edu/cgi-bin/netforum/econstat/a/1> >

Online Posting of Grades

< http://138.87.168.39/Jack_Chizmar/ECO131/gradebook189.html >

Fine Arts Course. Williams taught a seminar on developing and designing computer applications in the fine arts to online students who were connected solely through Internet services and contemporaneously to fine arts students oncampus using a computer teaching lab of Macintosh PowerPCs.

The course, Internet Models for Artistic Expression, was taught to 16 students oncampus and approximately 12 off-campus or online students. For several reasons, the off-campus students were volunteers who agreed to take

the course in exchange for providing feedback to the instructor. Many of the students were fine arts colleagues at other universities around the country who were motivated to participate in the course by their need to learn web page design. Because of the volunteer status, the online enrollment was fluid throughout the semester with about eight students seeing the course through and completing most of the assignments.

The course materials and the delivery method were designed so that both the oncampus as well as the online students participated in the same class and class activities. A course web site served as the focal point for all class activities and resources: syllabus, grading and evaluation, guidesheets and visuals for all projects, software and project templates available for downloading, links to online resources available elsewhere over the web, etc. The course used a special set of online materials designed by the instructor called *Web Etudes on Musical Themes*; these materials systematically presented tutorials on designing web pages based on several models for art, music, and theatre activities on the web. Student grades (coded for confidentiality) were also posted on the web as well as links to each student's work in progress. The Web Etudes portion of the web site and the archived RealAudio lectures were password protected and only oncampus and online students registered in the course could have access to these materials.

Each class session was broadcast over the Internet using RealAudio; the RealAudio broadcast was archived to the class web page after each session. This gave students the option of either reviewing portions of the class from the archived recording, or, for students who could not attend class during the scheduled time, the opportunity to audition the class at a later time. A special email address was created for the class lecture time and an email Eudora client was kept running on the instructor's workstation throughout the class. Online students were encouraged to submit questions and comments via email. The instructor then read the email and responded aloud to the class with simultaneous broadcast over the Internet.

All key class material was placed on the course web site, and the instructor made every attempt to keep the web materials, visuals, and the software being used in class synchronized orally over the Internet broadcast. In a sense, the online students became virtual students at their home site, following along with the class activities on campus. For the instructor, the role became one of being a play-by-play announcer, making every attempt to verbally describe the class activities to keep the online students involved in the class. The system worked very well and Internet and oncampus students soon began to respond to each other and even inquire when someone was absent with comments like "Where is Becky in Georgia today? We haven't heard anything from her!"

The course was designed to be project oriented with the only exam an Internet literacy which students had to pass to complete the course. Class times were spent with lecture/demonstration on techniques needed to complete the projects or on supervised work and question-and-answer time with students. At the end of each project, students presented their work to the class (including the online students) followed by an open class critique of the project. Email was used for instructor-to-student interaction to some extent, but students were encouraged to use NetForum for most of their comments and questions.

Considerable time was involved on the instructor's part to create the new tutorial teaching materials, the *Web Etudes*, as well as the online guidelines, resources, and lecture/demonstration materials. These were necessary to insure that the online students had sufficient resources to make up for the lack of visual communication in and outside of class. Various online resources for the course can be viewed on the Web at the following sites:

Seminar Home Page < <http://www.orat.ilstu.edu/classes/inet> >
RealAudio Lectures < <http://www.orat.ilstu.edu/classes/inet/#ra> >
NetForum Threaded Discussions < http://www.orat.ilstu.edu/cgi-bin/netforum/i_modelsem/a/1 >
Web Etudes on Musical Themes < <http://www.orat.ilstu.edu/classes/inet/etudes.html> >
Online Posting of Grades < <http://www.orat.ilstu.edu/classes/inet/#eval> >
Student Web design <<http://www.orat.ilstu.edu/classes/inet/#com>>
Internet Literacy Exam <<http://www.orat.ilstu.edu/classes/inet/docs/litexam.html>>

ADMINISTRATIVE HURDLES

As with any academic endeavor, the act of teaching an Internet course quickly created a number of complex administrative and political hurdles. We were part of a group of nine instructors who were awarded grants through a campus Internet teaching grant program to pioneer the development and execution of Internet courses on our campus. At semester's end, we surveyed the other seven instructors who received a grant and asked them to list the three most serious obstacles that they had to overcome to offer their Internet course. Their responses constitute

a litany of administrative and political hurdles that we discuss next. Our comments below on administrative and political issues come from our own personal experience and the responses from these other instructors in the grant program.

As pioneers on our campus, we were given both the privilege and the burden of participating in numerous meetings called to address the many administrative hurdles that must be resolved before one can legitimately offer a course of study to an Internet audience. The crux of most of the hurdles that had to be surmounted was the lack of an infrastructure in place on campus to support virtual or Internet-only teaching. The key administrative issues that were dealt with included: registration and admission, geographic restrictions, technical support, campus Internet literacy, security and authentication of work and grading, access to computer equipment and software, and issues of copyright and protection of creative effort.

Admission, registration, and geographic mindset. The campus system governing admittance, registration, and tuition and fees, is designed for the oncampus student and gives preference to students residing within the State of Illinois. Forms must be completed by hand or typewriter, signatures must be provided, and fees assessed on the traditional dichotomy of in-state and out-of-state residence and paid in cash or check. Everything must be done in a synchronous manner following the prescribed oncampus schedule for admittance, registration, drop-and-add, and so on. For a non-degree seeking student, from, say, Australia, wishing to take an Internet course, this procedure presents almost insurmountable problems. Forms must be obtained, completed, signed, and submitted to the university. Procedures must be followed for registration with payment to follow by deadlines set later in the semester. Fees are based on out-of-state tuition rates, rates high enough that many potential online students shop elsewhere on the Internet for less costly instruction.

After input from the Internet grant committee, a single admittance-registration form was created, the form was placed on the campus web page in Postscript format for downloading and fax submission, and a temporary decision was made to set aside out-of-state fees for the Spring 1997 set of online courses. Though these steps helped, online registration was still cumbersome requiring the necessary software, printer, and fax machine to complete the tasks. From the administration's perspective, a "real" signature remains a significant issue that prevents complete online automation of the admittance-registration process for non-degree seeking students taking an Internet class. Credit-card payment of fees (which may well work in lieu of a signature) remains an unacceptable financial option for the campus. The best solution, from an instructor's perspective for non-degree seeking students taking an Internet course, would be to have one online form for admittance and registration from a secure web server, payment by credit card at the time of completing the form (with the credit card an acceptable replacement for a signature), and a special tuition and fee scale that represents a compromise between in-state and out-of-state fees.

Technical support and Internet literacy. As pioneers of Internet teaching on our campus, the presenters and the other Internet grant instructors were left to fend for themselves for much of the technical support as well as dealing with issues of content, pedagogy, and delivery. We designed our own web pages, set up our web sites, tested and implemented new technologies like NetForum and RealAudio, juggled audio-visual equipment to get video and audio levels and quality set properly, and devoted significant portions of our teaching to helping students learn Internet skills of email and web browsing (this was especially true of adult learners in the Internet courses).

The other grant instructors indicated that the time demands of Internet-only teaching were exacerbated by the relatively poor technological skills of the students. One instructor felt that she spent too much time teaching students the technology. Another noted that Internet-only students must understand that a minimum level of technological expertise is required to succeed in an Internet course. She said, "I had too many students who came to me asking me to explain how to apply for an e-mail account, how to use their e-mail account, and how to navigate around the Internet. I had one student who realized only after her first exam that she was supposed to read materials on the computer. She had no idea what 'Internet course' meant."

There were some resources on campus for instructional technology, electronic or audio/visual services, web serving, and Internet education, but there was no central management of these resources that could focus the needed support specifically on the development of the Internet courses under design and production. For effective delivery of a comprehensive program of Internet instruction on a campus, central coordination of all of the technical resources noted must be in place, at least on a College-level, if not campus-wide. The risk of not having

such central resources is few faculty willing to commit the time needed to offer Internet courses and, the likelihood of attracting faculty who may be more interested in the technology of delivery rather than pedagogy and content.

Evaluation and authentication of work issues. This administrative problem applies to all forms of distance learning, not just Internet delivery. The issue is how to authenticate an online student's work so the grade assigned and the credit earned is going to the person who "authentically" did the work. Our campus did not have a network of proctors in place, like those used with correspondence courses, to monitor work at remote sites. The statistics and fine arts courses were predominantly project oriented and a high degree of contact was made, though electronically, between the student and the instructor. Hence, we developed a good feel for the quality and production of work an online student produced. A student would have had great difficulty finding or hiring someone to complete all of the work required to pass our courses. However, the alternative does exist and the work could have been performed by a surrogate student. A procedure for proctoring exams, or the use of some verifiable personal digital certificate to authenticate work, offer a traditional and a technologically exotic solution to the problem.

Copyright and access issues. Two final administrative concerns that we struggled with were control of access to our web-based instructional materials and judgments on copyright and distribution of resources. The first issue concerns our desire to protect our creative efforts and insure our students that they were receiving something unique for their tuition money. The second concern was the more universal question as to what copyrighted materials, both graphical, sonic, and textual, could be placed on Internet web pages for educational purposes. We decided to password protect critical portions of the course web sites so that the materials were only accessible to enrolled students. This included the Web Etude materials, and copyrighted materials, and the archived recordings of the class lectures for the fine arts course and the labs, tutorials, gradebook, copyrighted materials, and data retrieval site for the statistics course.

The lack of solutions to these administrative hurdles can and did affect student perceptions of a course. One of the grant instructors noted that administrative failures generated bad feeling toward his course, causing the course to get off on a rocky start.

POLITICAL ISSUES

Internet teaching also raised a number of thorny political issues. As with the administrative hurdles, the crux of most of the political issues that had to be surmounted was the lack of support for virtual or Internet-only teaching. The key political issues that were dealt with included time issues and reward structure.

Time issues: contact, release, and "any time." An Internet-only course grants students unprecedented any time, any place access to the instructor through email and online group forums. It simply takes more time to respond to a student inquiry via e-mail or forum than via speech. Furthermore, the end result of the lack of central management of technical resources discussed above was a considerable time burden on the presenters as they coped with issues of content and technology simultaneously to make the courses happen in an effective manner. Consequently, an Internet instructor must grapple with new and exhausting time demands. Not surprisingly, the survey instructors listed the overwhelming time demands of Internet instruction as a major obstacle. This finding is consistent with that reported by Lacina-Gifford and Kher-Durlabhji (1996) who report that "it was evident that teaching by Internet, using minimal support staff, was extremely time consuming." (p. 94)

The time demands of Internet teaching far exceeded those of any other teaching assignment in our experience. The statistics teacher received 643 e-mail and NetForum postings from students and sent 329 postings to students. The fine arts teacher received and responded to some 664 e-mail and NetForum postings from students.

It is clear that the overall time commitment to this kind of teaching far exceeds that of teaching students in classrooms. Responding to electronic postings is not all cost, however. One of the grant instructors noted, "I enjoy responding to [student's] messages very much, since the turnaround time is very quick. I also get to know my students well. [As a result,] there is more "one-on-one" time communicating over e-mail. I've had several [students] come and visit, which makes this course even more enjoyable. It does take me approximately one to two

hours every day to respond to the messages, so more time is put into communicating than, say, the same course taught on Tuesdays and Thursdays for 50 minutes each day.”

Internet instruction’s imperative to replace “talk” also creates huge time demands. As we discussed earlier, the major pedagogical decision that a novice Internet instructor faces is deciding how to replace the traditional “talk” of the oncampus classroom. Whatever pedagogy is ultimately chosen, it will assuredly result in high start-up costs. For effective delivery of a comprehensive program of Internet instruction on a campus, a central campus policy must be developed that recognizes and compensates faculty for the overwhelming start-up and marginal costs of Internet instruction. On our campus, none of the original nine pioneers received any release time to develop materials for their Internet courses, although they did receive a monetary grant that could be taken as overload salary, equipment, or other options. The risk of not having such a reward system in place, is few faculty willing to commit the time needed to offer Internet courses.

As an aside, the initial course development start-up costs become sunk costs after teaching an Internet-only course even one time. In this regard, we find it puzzling that our university has not asked any of the nine pioneer instructors to teach their courses a second time. Our advice, then, to the novice Internet course instructor is to develop a pedagogy that will also be effective in your oncampus courses. The oncampus, Internet-only design of our instructional experiment caused us to experience an epiphany of pedagogy—the best way to teach oncampus students is as if they are Internet students, i.e., as if the instructor is not there in the classroom with the students. Oncampus students would then be forced to own their own learning through active learning pedagogies, which the instructor can augment at critical moments precisely because he/she is there in the classroom with the students.

Reward Structure. Except for a grant that each of us received to develop and teach our Internet-only courses, there is a general feeling that the instructors' efforts have gone largely unrewarded. Because Internet instruction is new, none of the departmental salary policies on our campus contain chapter and verse concerning the reward structure that should be used to evaluate Internet-only teaching. It is even unclear whether faculty and administrators perceive Internet instruction as a legitimate teaching activity. We feel that the absence of comprehensive Internet teaching evaluation guidelines is a serious omission. Given the high administrative hurdles and the overwhelming time demands that must be surmounted to effectively deliver Internet instruction, failing to comprehensively develop a reward structure that recognizes the special circumstances of Internet instruction will ultimately limit faculty involvement to technologically elite who are more likely to place technological elegance before pedagogical relevance.

EVALUATION OF SUCCESSES AND FAILURES

During the last week of Spring 1997 semester, we administered (anonymously) a student evaluation instrument designed to measure attitude toward the instructor, progress on completing certain tasks, and attitudes toward the course to both the oncampus and Internet students. The questions were based on a student evaluation form developed by the Center for Faculty Evaluation and Development at Kansas State University. The results are tabulated as means for the oncampus and online groups and the difference of means. Where items were purposefully worded in the negative or ratings reversed those ratings were reversed in the tabulations so that all ratings were comparable.

Fine Arts Student Evaluation. The results from the fine arts students is available online from the course web site, with a link from this web page provided for viewing the unsolicited anecdotal comments that were emailed to the fine arts instructor by the oncampus and online students. The web link is:

< <http://www.orat.ilstu.edu/classes/inet/evalResults.html> >

Several conclusions were drawn from the evaluation data. The Likert scale was 1 to 5 with 5 the highest rating.

1. Both groups of students found the course to be well taught, highly effective, and successful in helping them learning the skills, techniques, and concepts of web design in the arts. The large majority of student means were 4.0 or above in affirmation of the success or quality of the teaching and content. For

- the items, "I rate this instructor a excellent teacher," " I rate this an excellent course," and "I learned a great deal in this course," the ratings for both groups were in the range of 4.4 to 5.0
2. The item asking how many of the Etude projects were completed supports the comments made above. Oncampus students completed 4.7 out of 5 of the projects; online students completed 3.2 of the projects (and the five students responding were the most active volunteers).
 3. For the items evaluating the usefulness of the various Internet resources, one is not surprised, and in fact, encouraged to see that the online group found the electronic tools more useful than the oncampus group, means of 3.61 and 4.03 respectively.
 4. The anecdotal comments show that, although the online group did not complete all of the work, the coursework that they did complete and the online delivery methods had a significant impact on their professional work. They have designed web projects for their own courses, professional interests, and music departments. They have also adopted some of these delivery techniques into their own teaching.
 5. Two oncampus students from this course graduated with a job in hand related to web design and multimedia. Two others had interviews for jobs related to the Internet and multimedia. One student in the class used his web page and Internet search tools to find his job in St. Louis, then showed another class student how he got his job. This student was successful in finding a job over the Internet in Colorado, and then show two others students the online job techniques and they both have interviews as a result.

Statistics Student Evaluation. The results from the statistics students is available online from the course web. The web link is:

< http://138.87.168.39/Jack_Chizmar/CAUSE/stud_eval.html >

Several conclusions were drawn from the evaluation data:

1. Even though the oncampus and Internet students completed the same labs and projects, Internet students reported lower frequencies than their oncampus cohorts for every question (save one) concerning the frequency of various instructor teaching procedures. Some of the differences were quite large. For example, oncampus students were much more likely than Internet students to feel that the instructor:
 - promoted teacher-student discussion.
 - demonstrated the importance and significance of the subject matter.
 - made it clear how each topic fit into the course.

Interestingly, Internet students felt more encouraged to express themselves freely and openly than their oncampus counterparts.

1. Internet students reported lower frequencies than their oncampus cohorts for every question (save one) concerning progress on completing certain tasks. These tasks represent "proficiencies" which the Economics department has determined all its graduates should possess. Again, some of the differences were large. In particular, oncampus students were much more likely than Internet students to feel that they are good at:
 - locating information on topics and issues that can be explained using economics (question 21).
 - locating economic data on topics covered in the course (question 22).
1. Internet students were more likely to feel that the statistics course required more reading and more work, and was more difficult than oncampus students (questions 30-31).
2. While both groups of students found the course to be well taught and highly effective, oncampus students were much more likely than their Internet counterparts to:

- want to take another course from this instructor.
- have positive feelings toward statistics as a field of study
- believe that the projects, tests, or assignments required original or creative thinking.
- rate the course as excellent.
- believe that they learned a great deal.

At the beginning of the Spring 1997 semester, the statistics instructor also administered a 39 question survey designed to measure aptitude in statistical reasoning to students as a pre-test. At the conclusion of the semester, he administered a 55 question survey to students as a post-test. The post-test had buried within it the same 39 questions from the pre-test. Table 1 reports descriptive statistics for the pre-test, post-test, and the difference (post - pre).

TABLE 1

<i>Variable</i>	<i>Oncampus</i>	<i>Internet</i>	<i>p-value</i>
pre-test	12.40	15.71	.0690
post-test	28.2	25.67	.0390
post-pre	15.80	10.00	.0017

The data show that the oncampus students increased their performance by 15.8 questions, while the Internet students increased their performance by only 10 questions. This difference is significant (p-value=.0017).

For the statistics course, the data show that Internet students achieved lower cognitive and affective gains than their oncampus counterparts. This finding contradicts Schutte (1997) who concluded that students in the online course outperform their in-class peers. This finding was not unexpected. Internet students who cannot participate in the “talk” of the course, must be highly self-disciplined learners to succeed in the course.

IN CONCLUSION

While the Internet students in the statistics course accomplished lower affective and cognitive achievement relative to their in-class counterparts, they still performed well absolutely. The online students for the fine arts course, those who actively participated and completed the majority of the coursework, performed comparably to the oncampus students and both the oncampus and online groups found the course a very favorable experience. Given these results, we count our Internet courses as a success.

However, we believe that we succeeded in spite of major administrative and political hurdles, hurdles not typically encountered by in-class instructors. These hurdles emanate from the “pioneer” nature of the enterprise we undertook, the lack of an infrastructure in place on campus to support virtual or Internet-only teaching, and from a, not unexpected, traditional mindset where rules and guidelines are based on local geography and physical presence.

The story we have shared relates our experiences with the technology, pedagogy, and administration of Internet delivery of instruction. Hopefully our story will help others to be proactive on these issues as they undertake to expand the curricular offerings on their campus into cyberspace. For those in an instructional role, we offer you two viable models for classroom delivery of Internet instruction between that of Chizmar who sought to create two independent course experiences, and that of Williams who sought to extend the oncampus classroom virtually over the Internet. Further, we have paved the way by alerting you to many of the key administrative and political hurdles that await you as you take on this task.

For those of you in an administrative role that may influence Internet delivery of instruction, you can ease the path of Internet instructors by creating policies that remove as many of these hurdles as possible. We urge you to use your position to help to create a global rather than local mindset when it comes to the procedural and support issues that will ensure a productive and satisfied virtual student audience on the Internet. Moreover, we urge you to use your position to insure that you have a cadre of instructors who feel that the enormous energy and time needed to effectively teach over the Internet is well supported by the campus infrastructure and amply rewarded.

AUTHOR NOTES

The authors wish to thank William Prigge and Information Systems, The Office of Research in Arts Technology, and Illinois State University's Internet Grant Program for their support for this project. Dr. John F. Chizmar (jfchizma@ilstu.edu) is Professor of Economics and may be contacted via e-mail or mail through the Department of Economics, Illinois State University, Normal, IL 61790-4000; Dr. David Williams (dwilliam@ilstu.edu) is Associate Dean for Research and Technology in the College of Fine Arts and Professor of Music, and may be reached through the College of Fine Arts, Illinois State University, Normal, IL 61790-5600

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