

“Enhancing Teaching with Technology: Blackboard@Duke” Interactive CD Project Report

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Overview

In the Fall of 2001, the Center for Instructional Technology contracted with erroyo, Inc. to create an interactive CD on Blackboard to enhance teaching at Duke. The Knoxville based company has produced video and multimedia projects for corporate and educational clients, including the Duke Executive Education program. The company was chosen for the project, based on their previous work and portfolio of interactive CD's produced for K-12 and higher education clients.

The CD was conceived to support the rollout of the enterprise-level version of Blackboard at Duke University. Duke has used the system for three years, supporting an increasing number of instructors across the various schools at the university. The interactive presentation on the CD provides practical information to current and potential Blackboard users, highlighting information on the types of skills, technical requirements, and time commitments needed to carry out the illustrated activities. As of June 21, 2002, over 800 copies of the CD have been distributed to Duke faculty, graduate students and support staff through an online request form and contacts through the CIT's Advisory Board, ITAC, OIT, Arts and Sciences Computing, Library staff and campus committees.

The CIT's user testing of the CD and a survey of CD users indicates interest in the content and an enthusiasm for the presentation. The online survey, completed by 56 respondents who received the CD via the CIT's online request form, indicates that over eighty percent regarded it as "very helpful" or "somewhat helpful" in learning more about Blackboard and stated that it gave them new ideas for using Blackboard in their own classes. Among those that had never used Blackboard before, over forty percent stated that they created a new course site based on material they saw on the CD.

More work needs to be done by the CIT over the semester to observe broader effects from the CD, including increased Blackboard use by first-time users, inquiries concerning more advanced functions, or departmental efforts that may be discussed and put in place based on the profiles contained on the CD. Although a clear majority of respondents were able to run the CD with little or no assistance, the range of computer operating systems, available plug-ins, and technology levels will need to be investigated further in future projects of this type.

Our experiences in working with erroyo on the project have been positive, with staff members of the CIT and erroyo working closely on the project. A longer time frame will be required for similar projects in the future to allow more time for user testing of draft versions of the interface and reworking of the project to improve usability. In shooting of the video material, simpler camera setups may be needed to make interview subjects feel more comfortable. An additional day of shooting might also provide more opportunities to obtain useful secondary footage, student input, and a broader range of faculty to accommodate varying schedules of the individuals involved.

Over 150 hours were contributed during a three month period to the project by members of the Center for Instructional Technology. Coordination of participating faculty members, creation of draft textual content and interview outlines, as well as the creation of still-frame screen captures for the CD constituted the largest time commitments for the project.

Goals of the Project

Content

The CD was intended to encourage a broader discussion of instructional technology among Duke faculty and to support the rollout and promotion of Blackboard to a larger Duke audience. The CD would provide examples of how Duke faculty already use Blackboard in their teaching, illustrating basic examples for novice users and more advanced uses of Blackboard for faculty who were already using the software in their teaching. In addition to show how Blackboard could be used, the CD would include information on the types of skills, technical requirements, and time commitment that would be needed to carrying out the illustrated activities.

Audience and Distribution

The CD would be used by the CIT and departmental support staff at the university in conjunction with other training and consulting and be distributed directly to Duke faculty and teaching staff for their own use. The CD could be used by administrators to promote Duke's efforts with online courses in demonstrations highlighting the range of activities carried out by university faculty and teaching staff.

Technical Requirements

A CD was considered for development in the project to reach as large an audience as possible. The material had to be used by faculty at their convenience on a computer at work or at home; in order to include a wide range of dynamic video material, a web site would not be practical for use outside of the office. Since a variety of computer platforms (Windows, Macintosh, Linux) and configurations were possible, a DVD was not practical due to the fact that only more recent machines contain a DVD drive. However, no solutions exist that allow for a single multimedia CD to be viewed by Windows, Macintosh, and Linux users. As a practical matter, in order to include video materials, the CD was developed for a cross-platform Windows and Macintosh audience. The CIT staff concluded that Linux users could be served by repurposing the content through the Blackboard web site so that users of the Linux operating system could at least view the materials with a high speed Internet connection here at Duke.

Project Experience

The project itself was intended as a "model project" so that the CIT could gain experience with the planning process and resources required to carry out an interactive multimedia project with an outside vendor. We also wished to obtain the raw materials produced during the project, such as edited videotapes, so that the materials could be repurposed by the CIT in other ways.

Project Outcomes

Content

Before initial consultations with eroyo, the CIT staff produced a working document outlining instructional goals and other requirements of the project. As part of that process, the CIT staff came up with a list of topics that could be addressed on the CD. These included a basic introduction to what Blackboard does for a new user and a collection of profiles on topics ranging from use of communication tools to enhance classroom learning to management of large classes and multiple sections in a more department-focused initiative. The topics were based on feedback from the CIT's Advisory Board, results of training and consultation on Blackboard with faculty, and the common types of questions asked by users seeking assistance from the Blackboard support group.

The CD was designed to enhance information provided on Duke's Blackboard web site. The design/content authoring for both projects occurred in tandem with close cooperation between Randy Riddle, leader of the CD project; Amy Campbell, Duke's Blackboard coordinator; and Stella Lee, the CIT's staff web designer. The survey of topics that would be addressed by the CD pointed to areas that needed development on Duke's Blackboard support site, since some of the topics needed updating or completely new material for access by faculty and teaching staff. The CIT's web designer worked closely with erroyo in design of the CD's packaging, coordinating the overall look and feel of the CD and the redesigned Blackboard support web site.

A list of possible faculty interviews was assembled to include profiles of faculty and teaching staff from a range of schools and departments at Duke. As the project progressed and the particular timelines and logistics became more apparent, the list was narrowed based on the faculty that could be involved with the project. Where possible, students who had taken classes profiled in the CD or who could offer their perspectives on similar classes in the department, were also scheduled for interviews during the videotaping sessions.

The CIT wanted to provide further tutorial information for novice users of Blackboard with the project. Blackboard produced a CD that gives a detailed tutorial on actually using the software, and the CIT gained permission from the company to reproduce the CD and include it in our package.

While erroyo could provide a framework for viewing the material and could shoot and produce video for the profiles, the CIT had to assemble the basic content for each section of the CD. This material included a list of interview questions and topics for each faculty member profiled, links to resources at the CIT's web site and the Duke Blackboard support web site, as well as outlines for the textual material on the CD such as the technical, time, and skill requirements for Blackboard activities. CIT staff conducted telephone interviews with each faculty member profiled on the CIT and assembled the material in the two week period before the video shooting was to begin.

The video segments were recorded during two days of shooting here at Duke in the Biddle Rare Book Room in Perkins Library. The erroyo crew consisted of a videographer and lighting/sound technician and the materials were recorded using a professional level Betacam setup. Faculty and students were scheduled for half-hour slots during both days and, where possible, arrangements were made to sit in on part of some faculty member's classes to record secondary footage to use with interviews. Some time slots were left open during the two days of shooting in order for the erroyo team to produce generic shots around campus of buildings, quads, computer clusters, and other public areas. In addition, students were asked to assist with producing special "setups" where they might be using laptops or handhelds to incorporate into the footage.

One faculty member was not available on the video shooting days. The CIT staff produced an audio interview with the faculty member and created still images with the cooperation of the faculty member so that his experiences could be included in the presentation. The two-day shooting schedule also presented problems for properly scheduling students from the participating faculty member's classes for interviews and for gathering of secondary footage that could have enriched the content more.

During the production process, erroyo refined the text drafts of the material for the CD contents and used topic and question lists during shooting and editing of each video segment. The CIT viewed drafts of the final material and was able to make corrections and suggestions during the process. As the deadline for submission of the final drafts approached, the CIT staff developed new content for the Duke Blackboard web site that was directly linked from the CD.

The finished CD, distributed in January 2002, received enthusiastic response in an online survey of individuals who received the CD set. The survey, open to approximately 360 individuals who requested the CD at through the Duke Blackboard and CIT web sites, received 56 responses. Over half of the respondents were Duke faculty and around 30% represented graduate students at the university; respondents included 43% from a mix of arts and sciences departments within Trinity College, with the

remainder spread across the Graduate, Medical, Engineering, Divinity, Fuqua and Nicholas Schools. Over eighty percent of those who used the CIT's "Blackboard@Duke" CD said it was very helpful or somewhat helpful in learning more about Blackboard; another 88% stated that it gave them new ideas for using Blackboard in their own classes. Forty-four percent of those who had never used Blackboard before created a new course site based on material they saw in the CD. Over ninety percent of those viewing the CD said they would recommend it to a colleague.

The Blackboard tutorial CD distributed in the set and produced by Blackboard also rated highly among users. Over seventy percent of users found it helpful or somewhat helpful in learning how to use Blackboard and fifty six percent stated that they felt confident in creating and using a Blackboard course after viewing the CD. Sixty nine percent stated that they would prefer learning how to use the software with the CD, rather than a classroom training session.

Some exact information about the broader group of campus users who received the CD cannot easily be measured with the survey. Overall, the CIT does not know exactly how many people actually used the CD's or may have had difficulty using it among those that received the set. We cannot determine how many non-Blackboard users have started using the system based on viewing the CD, or the types of features that current Blackboard users may have used for the first time.

In February, the CD was awarded a Knoxville Advertising Federation Silver "Addy" prize, competing with advertising, corporate training, and educational media produced by Knoxville area broadcasters, ad agencies and multimedia firms.

Audience and Distribution

In addition to the actual interactive CD, plans were put in place during the production process for distribution and assessment. Lynne O'Brien, Director of the CIT, provided input for possible distribution outlets for various groups on campus including support staff and administrators. An online form was developed so that faculty and teaching staff could request a copy of the CD when it became available. Advertisements were placed in the *Chronicle* and *Dialogue* and a paper mailing was sent to all Duke teaching faculty highlighting availability of the CD and directing individuals to the online form.

After the arrival of an initial shipment of CD's, it was tested among members of the CIT staff. Some user testing was done at that point and it was determined that a one-sheet set of instructions would prove useful for recipients of the CD to make the interface a little clearer to users. The sheet was done "in house" and is placed with each CD.

Groups of CD's were distributed to project participants, support staff and administrators, including members of OIT and Arts and Sciences Computing. The CD's were distributed through the CIT's Advisory Board, ITAC, and other campus committees. A demonstration of the CD was given in Perkins Library for members of the Library staff and CD's were given to Librarians to gain a better understanding of how faculty use library resources in conjunction with Blackboard.

As of February 26, 2002, approximately 360 CD's were distributed through our online request form to Duke faculty and staff and an additional three hundred copies had been distributed through direct contact with departmental support staff and faculty. A few requests (less than a ten) have been received through the online form from interested individuals at other universities. (Due to contractual restrictions with Blackboard, the "Blackboard Basics" CD produced by that company which is a part of the set cannot be distributed to users outside of Duke and is not included in sets sent to these users.) CIT staff are regularly offering the CD during training sessions for faculty, teaching staff, and graduate students.

Technical Considerations

The CD was authored using Macromedia Director for the interface and QuickTime encoding for the video segments. This is the most common and ubiquitous technology combination used for multimedia CD's and represented a common type of project seen by erroyo. The company tested the CD internally during

production to ensure that it would run on both Windows and Macintosh systems, including those with older versions of the operating system (back through Windows 95 on the PC and OS 8 on the Mac) and a slower processor (200 MHz on the PC, for example).

The CIT received informal reports that some users had difficulty with the CD because it required Quicktime. In some areas of campus, such as parts of the Medical School and Perkins Library, computers did not include the Quicktime plug-in or allow the end user to install the plug-in that was installed on the CD. Eleven percent of individuals responding to the online survey reported that they had to install Quicktime before using the CD. Four percent of users indicated that they required technical assistance from departmental support staff before running the CD and another four percent stated that they were unable to use the CD.

In our survey of individuals who requested the CD, approximately nine percent reported using the Linux operating system. The videos and textual material were converted to web format and placed at the Duke Blackboard web site in January for use by individuals on campus who are running Linux. The web version can be used in training and consultation by the CIT and departmental support staff when a CD is not available and allows non-Duke users to explore how the university's faculty and teaching staff use Blackboard. The online version of the CD project is located at <http://blackboard.duke.edu/CD/profile.html> and is linked under "Faculty>User Profiles" in the main menu of the site.

Project Experience

The production company, erroyo, met with the CIT for an initial "Discovery Session", where several aspects of the project were discussed – our goals, technical requirements, audience, and ideas for the look and feel of the finished project. The meeting included key members of the erroyo team, including the CD's producer, technical consultant, and designer.

Stacy Zotter acted as the Project Leader for erroyo, coordinating efforts between the CIT staff in Durham and the erroyo team members working on the project in Knoxville. The CIT's Project Leader set up a special web site to share materials – interview notes, drafts of textual materials, and graphics – to minimize difficulties in exchange of information between the two teams.

During the project, definite deadlines were set for various stages of the shooting, production of drafts, and the finished output. At erroyo, the team members had to reserve resources, such as their video editing studio, and work with outside vendors, including printers and the manufacturer of the CD, and it became imperative that the CIT staff meet deadlines for return of drafts and other materials so that original documents or changes could be incorporated at various stages of the project.

One area that was new for erroyo was our requirement of showing actual screens from the Blackboard courses discussed by faculty in the video. Because Blackboard is a "closed" and secure system, we set up a copy of the courses in question on a test server for access by CIT staff and erroyo team members. The video editor at erroyo indicated areas of the rough cut videos where stills would be appropriate to cover transitions between cuts in interview segments or to improve the flow of the piece. The CIT staff produced still frame screen captures of courses and these were sent via FTP for placement in the rough cut videotapes before being encoded for the CD.

Faculty interviewed for the project seemed quite positive about the experience. Informally, two did question the extensive amount of equipment and lights required for the videotaping. Actual videotaping using a smaller "prosumer" format (such as MiniDV), smaller lights, and less obtrusive microphones may have helped some faculty and students feel more at ease during the shooting with minimal impact on the technical and visual quality of video that will be reproduced in CD-ROM or DVD format. Less bulky equipment could have also created faster setups for each interview, allowing for more material to be recorded on each day of shooting.

Because the project was completed on a fairly short schedule, we did not obtain a working prototype of the CD's interface to perform usability testing with individuals here at Duke. We did observe that some

individuals took a few moments to see the links at the bottom of the screen on the CD; a repositioning of materials in the interface could have improved usability. Future projects would require at least two to three weeks additional time to allow for prototype testing and possible changes that might result from this testing. The CIT would encourage more time in scheduling for the project for testing of the interface and technical requirements among test groups of actual users through various stages of the project.

The actual duplication of the CD's was contracted out to a third-party supplier by error. Upon receiving the finished discs, the CIT noted that they had been duplicated through a procedure of "burning" blank recordable CD's. The CIT received a report from one user that was unable to use the CD on his computer because the CD was a recordable, a difficulty seen with some CD drives that from earlier than five years ago and with some early DVD computer drives. Typically on a CD project of this type with a minimum print run of 1,000, a duplicating facility will produce a master plate and actually "press" the CDs during duplication in the same manner as commercially released audio and computer CD's. In the future, we would work with the supplier on future projects to ensure that the duplication is done in this manner to prevent the problems some end users experienced.

The CIT was able to obtain the working materials edited and produced by error for the CD. In addition to the web version of the material at Duke's Blackboard support web site, the CIT will be producing a DVD kiosk of the profile videos for our annual Faculty Instructional Technology Showcase in April. The kiosk will also include other faculty instructional technology video profiles produced "in house" by the CIT.

Time and Resource Commitments

The CIT's Project Leader for the CD devoted approximately 90 hours to the project, spread out over a ten week period. This commitment involved coordination of the project between members of the CIT and error teams, gathering and writing original content for the production, proofing of materials, and interactions with faculty project.

Five other members of the CIT staff contributed another 65 hours during the project's conception and production. Tasks included design of visual materials for the CD, project planning meetings, content gathering and authoring, and proofing of materials.

Each of the dozen faculty members profiled on the CD committed to a telephone interview, lasting approximately twenty minutes, and an hour of time for setup and recording of the video interview on the day of shooting.

The actual production and duplication of the CD cost \$ 35,550. This fee included conceptual planning, design, and production services; video shooting, editing, and encoding; as well as the printing of covers and duplication of 1,000 copies of the 2-CD set.

Conclusions

The "Blackboard@Duke" CD successfully demonstrates how Duke faculty and teaching staff are using Blackboard through a mixture of video, textual elements, and web links. The video segments produced for the CD are engaging and contain a variety of elements, including comments from students, footage that shows Duke faculty interacting with students in their classes, and actual screenshots from the profiled courses. The textual elements, through concise descriptive material and bullet lists, distills essential information about the types of skills, technical requirements and time commitments required for the activities show on the CD. The CIT's user testing of the CD and survey of CD users indicates interest in the content and an enthusiasm for the presentation.

The CD has been distributed to a range of campus constituencies, including faculty and teaching staff, Graduate students, administrators, and support personnel. Although results from our user survey are

preliminary, reaction to the CD project has been positive. Among those answering the survey, users found the CD easy to navigate and useful in their work. More work needs to be done by the CIT over the next few months to observe broader secondary effects from the CD that may manifest in increased Blackboard use by first-time users, inquiries concerning more advanced functions, or departmental efforts that may be discussed based on material seen in the CD.

Results of our CD user survey provide a good starting point for reconsideration of technical requirements for future projects. Although a clear majority of respondents were able to run the CD with little or no assistance, the range of computer operating systems, available plug-ins, and technology levels will need to be investigated further. Future projects may need to be produced in DVD form, which does not require specific plug-ins or operating system requirements, or special Windows Media, Quicktime, and MPEG versions of the material may need to be contained on the same CD to fully accommodate the computing environment of Duke's users on Windows, Macintosh, and Linux operating systems.

Overall, our experiences working with erroyo in the production of the CD have been positive. Although minor communication and work flow problems were encountered during the production process, due to the geographic distances involved, these were overcome by close communication between the CIT and erroyo Project Leaders and use of Web technology to share working materials.

A longer time frame will be required for similar projects in the future to allow more time for user testing of draft versions of the interface and reworking of the project to improve useability. A longer time frame for the project would also allow for more efficient feedback in the Duke environment; unlike typical corporate projects encountered by erroyo, the CIT's project required feedback in major steps of the draft materials from participating faculty and other constituencies. This additional feedback to the process results in more working time that must be taken into account to coordinate resources at erroyo to schedule reediting of video materials or reprogramming by specialized staff members.

In shooting of the video material, simpler camera setups may be needed to make interview subjects feel more comfortable. An additional day of shooting might also provide more opportunities to obtain useful secondary footage, student input, and a broader range of faculty to accommodate varying schedules of the individuals involved.

The time requirements of the participating Duke staff should not be underestimated. Over 150 hours were contributed during a three month period to the project by members of the Center for Instructional Technology. Coordination of participating faculty members, creation of draft textual content and interview outlines, as well as the creation of still-frame screen captures for the CD constituted the largest time commitments for the project. Although the interface the CD, the video components, and packaging can be designed by an outside firm, the Duke participants must be able to provide content and guidance for the project in a timely manner.

Appendix

"Enhancing Teaching with Technology" CD Package

Project Timeline

October 2, 2001

Initial Proposal from the CIT

October 11, 2001

"Discovery Session" with the erroyo Team

October 25, 2001 - November 5, 2001

pre-interviews via telephone with participating faculty

content gathering and authoring by CIT staff for CD textual materials

November 6-7

video shooting at Duke

November 12

Initial interface design from erroyo

November 15

Final interface design from erroyo

mid-late November

editing of video segments by erroyo

November 20

initial CD package design, video scripts received from erroyo (for distribution to participating Duke faculty for feedback)

November 30

rough cuts of videos received from erroyo

December 5

erroyo sends CD case and silkscreen for CD face to printer

December 10

Second (final) round of video rough cuts received by the CIT with final feedback to erroyo same day

December 11-13

final integration of CD components and testing by erroyo

December 14

final master delivered to CIT for approval

December 15-16

final testing by erroyo, CD master sent to duplication facility

December 17-24

CD duplication by firm contracted by erroyo

December 20

CIT Places Form Online to Allow Individuals to Request the CD

December 27

CD packages assembled by erroyo; shipped to the CIT

January 1-7

CIT Assembles online user survey for CD

CIT produces insert for CD and distribution begins

February 15

Initial results of online user survey for CD received