

Evaluation of the 2000-2001 Center for Instructional Technology Incentive Grant Program

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Executive Summary

In 1999, Duke University began providing incentive grants to encourage faculty to explore and develop creative applications of technology to address instructional needs. During the second year of the granting program, in March of 2000, the CIT received 24 proposals requesting a total of \$601,794 in incentive funds for instructional technology projects. The CIT advisory board met on April 24, 2000 and selected 12 projects to receive either direct funding or dedicated CIT support in lieu of funding. A total of \$149,949 in CIT grant funds was allocated. All projects which received over \$5,000 in direct funding had some kind of matching support from the instructor's school or department. Several projects not funded through the CIT incentive grants were funded from other sources.

Additionally, in early 2000, five Dell FAST-start projects were chosen by the CIT Advisory Board from a pool of eleven faculty applicants. These projects served as pilots for the FAST-start program. In January, 2001, an Introductory Biology project was added to the FAST-start program.

Summary of key findings

1. Faculty from a wide variety of schools and departments participated in both the incentive grant and the Dell FAST-Start programs. Their projects affected a wide range of courses and students.
2. The grant programs continued to encourage the development or use of a wide range of instructional technologies
3. The educational goals of the projects were quite varied and emphasized enhancement of the learning process, increasing access to course content and materials, and increasing student interest and participation.
4. Faculty self-reported that for the most part their students reacted positively or very positively to their projects. They also reported that students in their courses had more familiarity with course content and were, therefore, more engaged during class sessions.
5. The projects funded during 2000-2001 are likely to be reused, expanded, and more widely distributed (to other faculty/departments/institutions) in the coming years.
6. Faculty used a variety of university resources/facilities to complete their projects, relying most heavily on the CIT.
7. Half of the project directors found the budgeted funding to be adequate to complete their projects, some (5) felt that they needed more funding (these estimated, additional monetary needs ranged from \$1,500 to \$7,000 and averaged to \$3,800 needed per project), and a few encountered unexpected expenses that were not budgeted for.
8. As was the case during the last funding cycle, the grant programs provided a way for schools and departments to leverage other efforts to incorporate instructional technology. In addition to CIT funds, the projects were supported by \$477,000 of funds from other sources.

9. 38.7% of the projects involved some form of collaboration. Those projects that listed collaborators were involved with other schools or departments at Duke, outside colleges or universities, corporate sponsors, and/or independent groups or organizations.

10. The majority of the project directors reported that their projects were successful (88.8%). Faculty listed several different aspects of their projects that they felt were particularly successful.

11. Faculty reported encountering a few problems while undertaking their projects and provided useful advice for future applicants. As was found to be true during the last funding cycle, most faculty discovered that IT projects took significantly more time and required more technical support or training than they had anticipated. Additional problems faced by both students and faculty were technological in nature.

12. As was found to be true during the last funding cycle (1999-2000), faculty who participated in CIT-funded projects feel that the university sends mixed messages about the importance of instructional technology and does not provide adequate recognition and reward for the level of time/effort required. Many faculty members expressed dissatisfaction with the fact that work in instructional technology is not widely recognized during renewals of appointments, promotions, and tenure review. Additionally, faculty expressed a desire to see funding and training from the CIT continue.

13. The grant program continued to highlight problems with overall technology infrastructure at Duke and disparities among different areas of the university in access to technology support staff and services.

Recommendations based on key findings

1. Encourage faculty to thoroughly research the challenges set forth by their project idea before submitting proposals. Many faculty were not aware, when they began their projects, how much time/effort/money would be needed to bring it to fruition.

2. Provide continued support beyond or in lieu of funding to project participants.

3. Continue to leverage resources and ensure adequate levels of funding (several faculty stated that additional funding was necessary for labor, hardware and software).

4. Continue to provide specific resources and support for faculty to improve their project assessment. Create online assessment resources for faculty.

5. Encourage collaborative efforts.

6. Due to the fact that funded projects may take several years to complete, longitudinal assessment of progress is warranted.

About the grant programs

Faculty Incentive Grants-

The CIT issued a call for incentive grant proposals on December 10, 1999. By the due date of March 22, 2000, the CIT had received 24 proposals for the program. The CIT advisory board, consisting of faculty members from each school plus one representative each from the Library, the Office of Information Technology and the Center for Instructional Technology, met on April 24, 2000 to review proposals and award funding to projects.

Two types of projects could be funded; innovation projects, and adaptation projects. Innovation projects could receive up to \$50,000 each and were required to demonstrate highly innovative approaches to using technology to improve learning or serve as a model for using existing technologies to make fundamental changes in the approach to teaching a subject. Adaptation

projects could receive between \$1,000 and \$5,000 each and were required to focus on adaptation of existing technologies to improve teaching and learning. Proposals could focus on one course, on part of a course or on segments of several courses. Collaborative projects were encouraged.

The review committee judged proposals based on the following criteria:

- Innovative use of technology to address an instructional need
- Broad and continuing impact
- Feasibility
- Fit with school and/or department priorities
- Support of University goals
- Inclusion of assessment strategies

Out of the 24 proposals 12 projects were funded amounting to \$149,949.

Dell FAST-start Grants-

In addition to the incentive grant program (in its second year), in early 2000 five Dell FAST-start projects were chosen by the CIT Advisory Board from a pool of eleven faculty applicants. These projects served as pilots for the FAST-start program. In January, 2001, an Introductory Biology project was added to the program.

The Dell FAST-start program was implemented by the Center for Instructional Technology in support of instructional technology projects. CIT staff recruits undergraduates at the freshman or sophomore level, matches them to selected faculty projects and trains them in the technologies needed to complete those projects.

FAST-start students receive use of a Dell laptop for the duration of the project and receive training and consultation from members of the CIT staff. Up to \$2,500 will be paid to each student for the time they will spend working on projects and in training sessions or consultation.

Through work on their assigned projects, students gain new technology skills and produce a portfolio item which may be helpful in later academic work and in the job marketplace. Working with their faculty partner, FAST-start students see how the resources they have produced can enhance teaching and learning in a course.

How information was collected about the projects and grant program

The conclusions in this report are based on several different sources of information. Project proposals contained information about initial goals, planned methods for accomplishing the goals and intended strategies for measuring project success. CIT staff met with project leaders during the year and collected informal feedback from them. At the end of the year, all project leaders were asked to complete an online questionnaire about their projects.

Key findings with explanation

1. Faculty from a wide variety of schools and departments participated in both the incentive grant and the Dell FAST-Start programs. Their projects affected a wide range of courses and students.

Number of faculty participating in CIT grant-funded projects for 2000-2001:

School	# of instructors as project leaders	# of other instructors	Total instructors	% of total instructors
Arts & Sciences	25	1	26	68.4%
Divinity School	1	0	1	2.6%
Fuqua School of Business	0	0	0	0%
Graduate School	1	0	1	2.6%
Nicholas School of Environment	1	0	1	2.6%
Pratt School of Engineering	1	0	1	2.6%
School of Law	1	2	3	7.9%
School of Medicine	2	2	4	10.5%
School of Nursing	1	0	1	2.6%
Total	33	5	38	100%

Arts and Sciences faculty participating in CIT grant-funded projects for 2000-2001:

Department	# faculty	% of all A & S
Asian & African Languages and Literature	1	3.8%
Biology	1	3.8%
CTLW	11	42.3%
History	2	7.7%
Institute of Statistics and Decision Sciences	1	3.8%
Kenan Institute for Ethics	1	3.8%
Literature	1	3.8%
Music	1	3.8%
Philosophy	1	3.8%
Public Policy Studies	2	7.7%
Romance Studies	4	15.4%
Total	26	100.0%

Courses and students using the projects, by school, during the 2000-2001 school year:

School	# courses ¹	% all courses	# students ²	% all students
Arts & Sciences	16	57.1%	1205	71.6%
Divinity School	1	3.6%	5	0.3%
Fuqua School of Business	0	0.0%	0	0.0%
Graduate School	1	3.6%	88	5.2%
Nicholas School of the Environ.	3	10.7%	65	3.9%
Pratt School of Engineering	3	10.7%	127	7.6%

School of Law	1	3.6%	110	6.5%
School of Medicine ³	0	0.0%	0	0.0% ³
School of Nursing	3	10.7%	82	4.9%
Total	28	100.0%	1682	100.0%

Note 1: Many projects were used in more than one course.

Note 2: Includes all student participants in any course. Numbers may include the same student in more than one course.

Note 3: Although there were four School of Medicine faculty involved in CIT funded projects, no students in the School of Medicine used the projects because one of the two projects involving these faculty was not finished at the time of the report and the other enhanced courses in a department outside of the School of Medicine.

2. The grant programs continued to encourage the development or use of a wide range of instructional technologies

**Types of technology products created in these projects:*

Type of technology created	# projects	% projects
Student exercise modules	9	50.0%
Web site/web pages	8	44.4%
Digital still images	8	44.4%
Digital audio/video	7	38.9%
Automated course management site (Blackboard/CourseInfo, etc.)	6	33.3%
CD-ROMs	5	27.8%
Classroom presentations/demonstrations	5	27.8%
Database	2	11.1%
Student work portfolios	2	11.1%
Custom software	1	5.6%
Tutorials	1	5.6%
Other: Proof of concept for developing statistical simulations	1	5.6%

*Respondents could choose more than one option

**Types of technologies faculty used during their projects:*

Type of technology used	# projects	% projects
Email	13	72.2%
Scanning/digitizing tools	11	61.1%
Blackboard (CourseInfo)	9	50.0%
Graphics illustration software	8	44.4%
Streaming media (audio and/or video)	8	44.4%
Forums and discussion boards, mailing lists	7	38.9%
HTML authoring tools	7	38.9%
PowerPoint or another presentation tool	6	33.3%
Image/media objects collection	5	27.8%
Interactive/animated simulations, demos (Java, Flash)	5	27.8%
Video editing tools	5	27.8%
Audio editing tools	4	22.2%
Specialized video software/equipment	3	16.7%
Specialized database	2	11.1%
Specialized graphics, image, 3D programs	2	11.1%
Specialized scientific applications	2	11.1%
Text chat	2	11.1%
3D, CAD, modeling applications	1	5.6%
Digital slide shows	1	5.6%
Electronic white boards, presentation systems	1	5.6%
Handheld devices	1	5.6%
Specialized music and sound applications/equipment	1	5.6%

Statistical applications	1	5.6%
Web editing tools	1	5.6%
Other: Handheld GIS mapping applications, course management system: Eduprise, Web-based text sharing programs: Connect, 5th floor media, et al.	3	16.7%

*Respondents could choose more than one option

3. The educational goals of the projects were quite varied and emphasized enhancement of the learning process, increasing access to course content and materials, and increasing student interest and participation.

**Desired teaching/learning outcomes listed by faculty project leaders:*

Desired teaching/learning outcome	# projects	% projects
Facilitating active learning	15	83.3%
Increasing availability of course materials	14	77.8%
Increasing student interest	14	77.8%
Increasing student learning	14	77.8%
Increasing student participation	11	61.1%
Increasing student-student interaction	11	61.1%
Increasing professor-student interaction	10	55.6%
Facilitating problem-oriented analysis	9	50.0%
Facilitating student research/authentic inquiry	9	50.0%
Improving student tech. skills	9	50.0%
Orienting/supporting unprepared students	9	50.0%
Maintaining consistency across multiple instructors, sections, TA's	8	44.4%
Overcoming geographic barriers	7	38.9%
Saving time/money	7	38.9%
Facilitating team-based learning	6	33.3%
Improving student visual literacy skills	6	33.3%
Team teaching/multidisciplinary efforts	6	33.3%
Improving student written communication skills	5	27.8%
Improving student presentation skills	4	22.2%
Improving student oral communication skills	3	16.7%
Attracting new groups of learners	2	11.1%

*Respondents could choose more than one option

4. Faculty self-reported that for the most part their students reacted positively or very positively to their projects (83.3%). They also reported that students in their courses had more familiarity with course content and were, therefore, more engaged during class sessions.

My student's overall reaction to my project was:

Reaction	# projects	% projects
Very positive	7	38.9%
Positive	8	44.4%
Neutral	1	5.6%
No answer	2	11.1%

***When asked what students liked best, faculty mentioned the following:**

- "Acessibility (sic), completeness, and ease of use."
- "Just guessing, I would have to say the fact that it was real and that it was video. And the fact there is no pressure, so they may take it as many times as they like and the grade does not matter."
- "Comprehensive and user-friendly."

- Primary source materials at student's fingertips.
- "Self-assessment."
- "Easier access."
- "Students were extremely positive about the content presented."
- Moving images for the study of film.
- Real world useage of GIS technology.
- "CourseInfo discussion boards, availability of syllabus on web, availability of noticeboard for listing events and speakers on web."
- They felt the Word/CourseInfo combo was easy to use and kept them in close, convenient contact with their writing tachers." (sic)
- "Learn about the updated important social changes in China. Improve their aural and oral skills. Increase their learning interest."
- Students could easily access course materials via the web.
- "(1) The many new and different perspectives brought to the subject matter; (2) The engaging aspects of video; (3) The ability of the user to direct his or her movement through the materials."

*Some of these are paraphrased from the project leader's reports

****Methods faculty used to assess the outcomes of their projects:***

Method	# projects	% projects
Feedback during course (oral or written)	10	55.6%
Targeted Survey/Questionnaire/Course Evaluation	7	38.9%
Have not assessed yet	2	11.1%
Interviews	2	11.1%
Polled students in class	1	5.6%
Online gradebook	1	5.6%

* Some projects may have used more than one of these methods.

5. The projects funded during 2000-2001 are likely to be reused, expanded, and more widely distributed (to other faculty/departments/institutions) in the coming years.

****Faculty member's future plans for their projects:***

Future plans	# projects	% projects
Using it in the same course in a future semester	14	77.8%
Encouraging other Duke faculty to use my project	13	72.2%
Adding content	12	66.7%
Training other faculty to use my project	11	61.1%
Using it in a different course in a future semester	10	55.6%
Securing additional funding to expand this project	9	50.0%
Making the project available beyond Duke	7	38.9%
Other: "Completing the development of the auto-tutorial we began during last semester."; "Determining student reactions to our auto-tutorials."; "as yet to be determined..."; "We have just submitted an NSF grant, and have our fingers crossed."; "Extend beyond just using streaming clips, to also using/archiving still images, audio clips, and higher-quality (non-streaming) clips."; "I will be using this technology for 3 additional courses bring (sic) the total to 5 courses: A 5 day professional courses (sic) in satellite remote sensing (offered Aug 2001), ENV354 Conservation GIS (Fall 2001), and Marine and Coastal GIS Applications (Spring 2002)."; "The next step would include preparing digital photos of the studio equipment, especially pictures which show how patch cables and mixing board buttons would be set."	6	33.3%

*Respondents could choose more than one of these options

6. Faculty used a variety of university resources/facilities to complete their projects relying most heavily on the CIT.

***Resources used to complete and implement this project:**

Resources used	# projects	% projects
Computer projection in class	8	44.4%
Public computer clusters	7	38.9%
Special training outside of class time	6	33.3%
Computers in computer classroom	6	33.3%
Special training during class time	5	27.8%
A graduate student, TA, or other work study student	5	27.8%
A programmer employed specifically for this project	3	16.7%
Other: "In addition to a programmer (Dell FAST start student) provided by CIT, a staff member from Intro Bio, Sarah Huber, worked extensively on the project."; "CIT laptop; Dell computer cluster."; "Language Lab computers."; "additional faculty in Biostatistics and frequent consults with CIT staff."; "Another instructor in the language program."; "Use of 4 Trimble ProXRS GPS systems and ArcPad and ArcGIS8.1 software."	5	27.8%

*Respondents could choose more than one of these options

***Received technical support from the following sources:**

Received tech. support from	# projects	% projects
Center for Instructional Technology	14	77.8%
Undergraduate student employees	5	27.8%
Staff in your department or school	5	27.8%
Graduate student employees	4	22.2%
Office of Information Technology	4	22.2%
Peers	4	22.2%
Other schools or departments within Duke	1	5.6%

*Respondents could choose more than one of these options

7. Half of the project directors found the budgeted funding to be adequate to complete their projects, some (5) felt that they needed more funding (these estimated, additional monetary needs ranged from \$1,500 to \$7,000 and averaged to \$3,800 needed per project), and a few encountered unexpected expenses that were not budgeted for.

The budgeted funding for this project was adequate:

Funding was adequate?	# projects	% projects
True	9	50.0%
False	5	27.7%
No answer	4	22.2%
Total	18	100%

Most projects (16) had no unexpected expenses. However, project directors who did listed the following unexpected expenses (includes using resources outside of project scope):

- Specialized hardware & software for scanning, video capture/digitizing, video editing, video conversion/encoding for streaming.
- Purchase of HP Photosmart S20 slide/still scanner, Sony Media Converter box (analog-to-dv), Digital Origin IntroDV package (firewire card + video capture/editing software), Terran/Media 100 Medial Cleaner 5 software (for batch encoding to streaming video formats), a stand-alone DVD player, and a RAM upgrade for video workstation.
- "The cost of having a computer architecture built was more than we anticipated. Our bids for our platform varies (sic) by 400%. We are reasonably satisfied with the vendor arrangement we have arrived at."

8. As was the case during the last funding cycle, the grant programs provided a way for schools and departments to leverage other efforts to incorporate instructional technology. In addition to CIT funds, the projects were supported by \$477,000 of funds from other sources.

I secured additional funding or in kind support from:

- National Humanities Center in the amount of \$17,000
- NSF application in preparation (no amount listed)
- Trent Foundation for travel to France and purchase of rare comics (no amount listed)
- Arts & Sciences Professional Development Fund for purchase of digital camera (no amount listed)
- Special Collections, Perkins Library agreed to purchase three comic books (no amount listed)
- Law School up to \$400,000, anonymous donor providing most of the funding for the total project (no amount listed), various media companies donating content which will be worth \$40,000 to \$60,000 by end of larger project
- Office of the Vice Provost for International Affairs (no amount or description listed)
- Center for Documentary Studies provided space for a computer station and staff to design and monitor web site

9. 38.7% of the projects involved some form of collaboration. Those projects that listed collaborators were involved with other schools or departments at Duke, outside colleges or universities, corporate sponsors, and/or independent groups or organizations.

****I collaborated with the following groups in completing my project:***

Collaborators	# projects	% projects
No collaborators listed	12	66.6%
Other schools or departments at Duke	3	16.6%
Other colleges or universities	2	11.1%
Corporate sponsors	1	5.5%
Independent groups or organizations	1	5.5%

*Respondents could choose more than one of these options

10. The majority of the project directors reported that their projects were successful (88.8%). Faculty listed several different aspects of their projects that they felt were particularly successful.

Overall, how would you rate your project?

Project rating	# projects	% projects
Very successful	12	66.6 %
Moderately successful	4	22.2%
Not very successful	1	5.5%
No answer	1	5.5%
Total	18	100%

***Faculty cited the following as successful aspects of their projects:**

- Creation of prototype CD-ROM
- Use of video (enthusiastically received by students)
- Online tutorials and online streaming audio (better than CD recordings on reserve and easy to prepare) served to increase student knowledge, energy and interest

- Overcoming geographic barriers, introducing authentic material from target culture into language classroom, introducing updated social phenomena, improving student's aural and oral skills, and broadening the context, deepening the content of topics
- Ease of use of CourseInfo, availability of PowerPoint presentations on the web 24/7, ability of students who miss class to catch up due to materials being available online, ability to post electronic announcements/reminders, supplementary articles archived online, online self study module to replace canceled class, and the high level of use of the site by students and one of the Teaching Assistants
- Articulation of a set of procedures and guidelines for sharing and responding to student writings online that will be useful to faculty teaching writing-intensive courses
- Online forum for frank and anonymous discussion of issues, speakers and world events
- Multi-session tutorial involving student uploads of data sets to handheld devices facilitating additional data entry, synchronization to desktop workstation software for further analysis and student modification of handheld software (ArcPad)
- Student enthusiasm, creation of a library of media objects for future instructional use
- Students positive about content presented
- Enhancement of student technical skills while building a resource for students, teachers and researchers across the world and innovation of students participating in project
- Web site is an attractive and efficient way to present large amounts of information, is flexible, and will continue to grow
- Five working modules
- Excellent CD-ROM produced

*Paraphrased from project leader's reports

11. Faculty reported encountering a few problems while undertaking their projects and provided useful advice for future applicants. As was found to be true during the last funding cycle, most faculty discovered that IT projects took significantly more time and required more technical support or training than they had anticipated. Additional problems faced by both students and faculty were technological in nature.

Some typical advice for future applicants:

- Spend time pre-planning the project
- "Make sure you will have time and energy (sic) to work on this kind of project"
- Start small
- Be familiar with the technology that you will have to use to implement the project and be aware of its limitations
- "To work closely with CIT staff (great people and very supportive)"
- "Remember that a web page is NEVER truly finished..."

*Some of these are paraphrased from the project leader's reports

12. As was found to be true during the last funding cycle (1999-2000), faculty who participated in CIT-funded projects feel that the university sends mixed messages about the importance of instructional technology and does not provide adequate recognition and reward for the level of time/effort required. Many faculty members expressed dissatisfaction with the fact that work in instructional technology is not widely recognized during renewals of appointments, promotions, and tenure review. Additionally, faculty expressed a desire to see funding and training from the CIT continue.

Typical comments from faculty:

- "Support faculty initiatives through stipends, course reduction, etc. It is difficult to carry out a project like this when one is fully engaged in the semester. Also, ensure that this type of work actually counts for something in the renewal, promotion, tenure process."
- "Give the CIT adequate resources; they do an extraordinary job of supporting all of us."

13. The grant program continued to highlight problems with overall technology infrastructure at Duke and disparities among different areas of the university in access to technology support staff and services.

Typical comments from faculty:

- "...The thing that needs to be improved is the logistics. I had to move equipment from our music studio into the classroom for every class during the semester, and this is time consuming and puts a lot a (sic) wear and tear on the equipment. It would be wonderful to have a fully equipped music studio facility that could also serve as a classroom for the course."
- "Duke University needs to expand its efforts at two different levels: 1. Promoting general and universal instructional technology infrastructure and support across the entire university. This entails the development of modern teaching facilities across all departments and should become a top priority for development and endowment targets in the future..."