**Contact: Diana Gonzalez**

## STUDY OF DISTANCE EDUCATION AT THE REGENT UNIVERSITIES

**Action Requested:**     Receive the study of distance education at the Regent universities.


**Executive Summary:**     Following discussion of the Annual Distance Education Report in September 2005, the Board of Regents directed the Board Office to conduct a study of distance education at the Regent institutions with a particular focus on the cost-effectiveness of delivery technologies.  The Board Office designed and conducted a study, in consultation with academic and technology representatives at the Regent universities, to assess the program offerings through distance education and the accompanying delivery modes.

The study looked at the process used by the Regent universities to select technologies/delivery modes for distance education.  The study did not include a cost analysis of distance education and digital content development because a meaningful cost-accounting system which segregates on-campus expenditures from expenditures relating to distance education, especially in areas such as faculty time and allocation of the cost of technology, is not currently available[1].  However, the study did reveal that technologies/delivery modes are selected to fit the programmatic and student needs and that no one single technology drives the distance education process.


**Details of Study:**

◇     The objectives of the study were (1) to describe distance education; (2) to identify the methods used by the Regent universities to determine needs for distance education offerings; (3) to identify the process used to assess the potential to offer particular programs; and (4) to describe the current distance education programmatic offerings and the technology/delivery modes used by the Regent universities for those offerings.

**1.**     Description of distance education.  Board Policy §6.13 defines distance education as follows:

"a formal educational process in which instruction occurs (1) when student and instructor are not in the same location, or (2) when in-person instruction is provided at off-campus locations.  Distance education may employ guided independent study, or audio, video, or computer technologies; instruction may be synchronous or asynchronous.

Distance education initiatives are included within the missions of the Regent institutions and shall be undertaken to the extent that resources allow.  The Regent institutions shall seek to anticipate and respond to educational needs, especially those of individuals who may not be able to attend classes on campus.

Programs offered by the Regent universities shall be of high quality regardless of where offered and the methodology or technology used.  Similarly, the Regent universities shall seek to undertake high-quality cooperative and collaborative efforts with both Regent and non-Regent institutions of higher education where such cooperation will benefit citizens."

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[1] Universities and distance education organizations are beginning to develop standards and processes to assess and allocate these costs.

2.  <u>Methods to identify needs for distance education offerings</u>.  Each Regent university has a system of on-going data collection regarding distance education needs and of using the results to inform decisions about off-campus programmatic offerings.  Educational needs may be identified by any of the following at the Regent universities:

☑ Student and employer market demand, including formal general market studies; informal general market studies; competitor market analyses; industry information; analyses of enrollment data and trends; and formal target market studies.

☑ Assessments of educational needs, including academic research; professional and industry associations; and industry assessments.

☑ Assessments of economic/workforce development requirements, including demographic data; studies (e.g., Battelle report); and industry groups.

☑ Academic and institutional needs.

3.  <u>Process to determine programming potential</u>.  The distance education units exist within the decision-making system of each university and are influenced by a number of factors in determining programming potential, including the following.

☑ Existence of a "champion."  Such a person might be a faculty member or a continuing education staff member who proposes that a program be offered by distance education.

☑ Review by the academic unit.  The academic unit that receives a proposal for a distance education program analyzes its capacity (including faculty capacity) to offer the program by distance education and its capacity to develop and teach the course(s).  The unit also considers the demand for the program and conducts a cost-benefit and market analysis.

☑ Further analysis.  This might include a formal target market study; development of a detailed program plan; development of a promotion plan; development of a delivery plan; allocation of teaching time for content development and delivery; development of a project plan and budget for the program; and allocation of content development and support resources.

☑ Academic unit decision.  If the unit decides to proceed, it may be necessary to develop a new academic program which must be approved by the Board of Regents.

☑ Development and delivery.  If an affirmative decision is made, the initiating unit and the distance education department proceed with program development and delivery.

☑ Key decision-making factors.

🖝 The goal of the Regent universities is to provide accessible and affordable educational opportunities to the citizens of Iowa.  However, while distance education supports that goal, it is not feasible to offer all on-campus programs off-campus.

🖝 The Regent universities strive to meet institutional and departmental goals within the constraints of available funding, including tuition.  However, the quality standards established by the universities generally require the use of campus-based faculty, rather than off-campus temporary faculty, to develop and teach distance education. This affects the overall costs of delivering distance education.

🖝 To the extent possible, responsiveness to stakeholders is factored into distance education program selection and content decisions.

      ⌨ The role played by the Regent universities in the use of leading-edge distance education technologies is reflected in the choice of distance education technologies that support programmatic offerings.

4. <u>Selection of technology/delivery modes for programmatic offerings</u>. A number of factors are considered in assessing technology for distance education delivery, including the following.

    ☑ Student access. The institution selects the media that will provide students the best access to the distance education content; it considers geographic proximity and students' technological resources and skills.

    ☑ Pedagogical requirements. The institution determines the best match between the content to be delivered, the teaching and learning experiences, and the devices that will best communicate the content.

    ☑ Market requirements. The institution considers the expectations of students for quality, cost, convenience, interaction, and other competitive factors.

    ☑ Institutional capacity. The institution considers the availability of the knowledge, technical resources, and skills of the academic unit, the instructor, and the content developer.

    ☑ Cost/value. The institution considers the value to the course or program of more expensive modes of delivery and the budget constraints of the course to use a particular technology.

    ☑ Technology characteristics. The institution considers capacity for asynchronous/synchronous delivery, allocation of capital cost, remote site cost, production cost, per-unit delivery unit, support cost, video quality, audio quality, presentation quality (digital materials), interactivity, reach, convenience, and use limitations.


Table 1 (Attachment 1) describes the distance education program offerings at the Regent universities and the primary delivery method for each offering. Table 2 (Attachment 1) describes a variety of delivery methods and the advantages and disadvantages of each.

**BOARD OF REGENTS**
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**TABLE 1 – UNIVERSITY OF IOWA**
**BOARD OF REGENTS DISTANCE EDUCATION STUDY**
**PROGRAM OFFERINGS**
**NOVEMBER 2005**

**AGENDA ITEM 3g**
**ATTACHMENT 1**
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| PROGRAMS | # of students* | Face-to-face (FTF) Off-campus | Face-to-face (FTF) Location | Face-to-face (FTF) On-campus | WWW still media | WWW streaming media | GIS° | Audio tape/CD | Video tape/VCD/DVD | ICN | Access Grid | Live digital capture (Iluminate/Camtasia) | LMS° (WebCT) | Residency Yes | Residency No |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MSW - Social Work | 146 | P | Des Moines, Quad Cities, Sioux City | X | | | | | | X | | X | X | | X |
| MBA – Business Administration | 849 | P | Cedar Rapids, Newton, Des Moines, Quad Cities, Hong Kong, Beijing | | X | X | | | | X | | X | X | | X |
| MPH – Public Health | 69 | | | X | X | P | | | | X | | X | X | | X |
| MS – Computer Science | 7 | | | X | | P | | | | | | X | X | | X |
| MS – Electrical Engineering | 2 | | | X | | P | | | | | | X | X | | X |
| MS – Computer Engineering | 2 | | | X | | P | | | | | | X | X | | X |
| MSN – Nursing | 126 | X | Des Moines | X | X | P | | | | X | | X | X | | X |
| BSN – Nursing | 283 | X | Orange City, Spencer, Calmar, Ft. Dodge, Mason City, Ottumwa | X | X | P | | | | X | | X | X | | X |
| MA – Library Science | 24 | | | X | | | | | | P | | | | | X |
| BLS – Liberal Studies | 3551** | | | | X | X | X | X | X | X | | X | | | X |
| Certificate – Public Health | 39 | | | X | X | P | | | | X | | X | X | | X |
| Endorsement – Talented and Gifted Endorsement | 52 | | | P | | X | | | | X | | X | | X | |

°GIS – guided independent study; LMS = learning management system
*With the exception of GIS, numbers represent an unduplicated headcount of students admitted to the respective programs.  Non-degree students taking coursework in these programs, before formal admission, are not included.
**Duplicated headcount, degree seeking and non-degree seeking.

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**TABLE 2 – UNIVERSITY OF IOWA**
**BOARD OF REGENTS DISTANCE EDUCATION STUDY**
**COMPARISON OF DELIVERY METHODS**
**NOVEMBER 2005**

**AGENDA ITEM 3g**
**ATTACHMENT 1**
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| Delivery methods | Briefly describe technology/ methodology | Advantages[2] (list as many as apply) of using this technology/ methodology | Disadvantages[3] (list as many as apply) of using this technology/ methodology | Total # of courses in FY 05 using this technology primarily | Total # of students in FY 05 using this technology/ methodology primarily | This technology/ methodology best used when[4] | Incremental type of cost[5] to use this technology/ methodology | Student requirements[6] to use this technology/ methodology |
|---|---|---|---|---|---|---|---|---|
| ICN video | MPEG-2  Compression technology | Proven methodology.<br><br>Has some momentum given the number of sites in place<br><br>High quality fully interactive video | Requires access to an ICN equipped facility<br><br>Only works in within the state of Iowa | 26 | 766 | High quality full motion video is required | $8.10 charge per hour per site | Attendance at an ICN classroom |
| Streaming video | Video or audio transmitted over an IP network that users can begin to play immediately instead of waiting for the entire file to download. | Relatively inexpensive<br><br>Deliverable to a home PC | Dependency of high  speed broadband IP network access by end-user<br><br>Requires operator assistance to set up, encode, and save to video server. | 175 | 4500 (approx.) | Reaching a large audience<br><br>Service to the home is required<br><br>Recording classroom activity for later review using video-on-demand over IP.<br><br>Broadcasting (webcast) a lecture or presentation. | Depending on the adoption rate and specific product used, this could require additional licenses.<br><br>Also, additional servers and storage could be required. | Desktop computer – Windows or Macintosh - with, speakers |
| Off-campus FTF | | | | 102 | 5396 | | Travel | |
| GIS | | | | | | | | |
| Tape/CD | Backup for missed lectures | | | | | | | |
| WebCT | Web-based course site management software | Asynchronous communication, anytime/anywhere access to course materials, password-protected course content, built-in assessment tools, FERPA-aligned dissemination of grades | Not supported by all browsers, slow response for dial-up users, learning curve for instructors | 2,000 (est.) | 20,000 (est.) | Students unable to meet in physical classroom, instructors wish to make material available 24/7, asynchronous communication desired | Web servers, software license, support staff | Access to computer, Internet connection, (preferably broadband) |
| Access grid | Collection of resources - projectors, cameras, microphones and computers linked by high speed networks to enable audiovisual collaboration, application & desktop sharing between remote participants: | Very good visualization and collaboration tool.<br><br>Does not require MCU | No centralized tech support.<br><br>Room setup can be expensive.<br><br>Operation can be difficult.<br>. | Not currently used at the University of Iowa for courses | Not currently used at the University of Iowa for courses | Collaboration requiring visualization; group-to-group interactions, large-scale distributed meetings, collaborative work sessions, seminars, lectures, tutorials, and training. | | Hardware: Desktop computer – Windows or Macintosh, microphone, speakers, camera.<br><br>Software: AccessGrid software (no cost), microphone, speakers |

[2] e.g., opportunity for student/instructor interaction, easy to learn to use, etc.
[3] e.g., lack of opportunity for student/instructor interaction, steepness of learning curve, etc.
[4] e.g., convenience of audience, e.g., place bound students, etc.
[5] e.g., travel, postage, specialized equipment, etc.
[6] e.g., ability to travel, computer, high speed internet, etc.

| Delivery methods | Briefly describe technology/ methodology | Advantages[7] (list as many as apply) of using this technology/ methodology | Disadvantages[8] (list as many as apply) of using this technology/ methodology | Total # of courses in FY 05 using this technology primarily | Total # of students in FY 05 using this technology/ methodology primarily | This technology/ methodology best used when[9] | Incremental type of cost[10] to use this technology/ methodology | Student requirements[11] to use this technology/ methodology |
|---|---|---|---|---|---|---|---|---|
| Elluminate | A real-time virtual classroom environment designed for distance learning and collaboration.  Features: 2-way audio, direct messaging, shared whiteboard, desktop & application sharing, quizzes & surveys, breakout rooms, video using a webcam, participant status. | Excellent for low-band connections.  Deliverable to a home PC  Uses cross-platform Java applets. | Initial investment can be expensive.  Only one person at time can speak.  Doesn't do video very well.  . | | | Reaching locations with low bandwidth connectivity.  Structured meetings, presentations, or classes.  Real time and on-demand training. | License costs are approximately $1,000 per seat.  A seat is required for each student simultaneously use the system. | Hardware: computer such as Windows XP or Macintosh OS X with microphone and speakers.  Camera is optional.  Software: JavaWeb Start and Java applets from Elluminate (no cost) |
| Camtasia | A suite of applications designed to record screen activity and audio for playback. | | | | | Recording desktop computer activity for later playback. | | Desktop computer (Windows or Macintosh) with speakers, |
| Satellite uplink or downlink | | Can link anywhere with like facilities | Expensive to uplink | | | Real time broadcast quality video is required | | |
| H.323 Video Conferencing (also known as "Polycom") | Two-way, interactive, room-based and desktop video over IP | Relatively inexpensive.  Deliverable to a home PC  Standards based technology makes interoperability between different kinds of  equipment possible | Dependency on high speed broadband IP network access by end-user  Difficult to share data (documents, applications, etc.)  No viable Macintosh solution.  Meetings involving multiple sites (>2) requires an MCU. | | | Low cost interactive video is required.  Bringing in guest speakers at remote locations.  Reaching students at locations outside of Iowa. | | Hardware: computer, camera and microphone.  Software: H.323 software client.  -or-  Access to a room-based H.323 endpoint. |

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[7] e.g., opportunity for student/instructor interaction, easy to learn to use, etc.
[8] e.g., lack of opportunity for student/instructor interaction, steepness of learning curve, etc.
[9] e.g., convenience of audience, e.g., place bound students, etc.
[10] e.g., travel, postage, specialized equipment, etc.
[11] e.g., ability to travel, computer, high speed internet, etc.

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**TABLE 1 – IOWA STATE UNIVERSITY**
**BOARD OF REGENTS DISTANCE EDUCATION STUDY**
**PROGRAM OFFERINGS**
**NOVEMBER 2005**

**AGENDA ITEM 3g**
**ATTACHMENT 1**
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| PROGRAMS | # of students | Face-to-face (FTF) Off-campus | Location | On-campus | WWW still media | WWW streaming media | GIS° | Audio tape/CD | Video tape/VCD/DVD | ICN | Access Grid | Live digital capture (elluminate/ Camtasia) | LMS° (WebCT) | Residency Yes | Residency No |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bachelor of Science in Professional Agriculture | 14 | | | | P | | | x | x | x | | | | | x |
| BS in Electrical Engineering | 5 | X | Rockwell | | | | | | | | | | | | |
| BSCRP | 14 | | | | | | | | X | x | | | | x | |
| Certificate of Advanced Medical Nutrition Therapy | 2 | | | | P | | | | | | | | | | x |
| Certificate of Dietetics Communication and Counseling | 2 | | | | P | | | | | | | | | | x |
| Certificate of Dietetics Management | 1 | | | | P | | | | | | | | | | x |
| Certificate of Family Financial Planning | | | | | P | | | | | | | | | | x |
| Financial Counselor Certification | 28 | | | | P | | | | | | | | | | x |
| Gerontology Certificate | 1 | | | | P | | | | | | | | | | x |
| Certificate of Power Systems Engineering | 0 | | | | | P | | x | x | | | | | | x |
| Certificate in Information Assurance | 31 | | | | | P | | x | | | | | | | x |
| Certificate in Systems Engineering | 0 | | | | | P | | x | x | | | | | | x |
| Certificate of Public Management | 10 | P | Des Moines | | | | | | x | x | | | | | x |
| Master of Agriculture | 189 | | | | P | | | x | x | | | | | | x |
| Master of Engineering in Systems Engineering | 99 | | | | | P | | x | x | | | | | | x |
| Master of Science in Agronomy | 89 | | | | P | | | x | | | | | | | x |
| Master of Science in Electrical and computer Engineering | 49 | | | | | P | | x | x | | | | | | x |
| Master of Science in Mechanical Engineering | 61 | | | | | P | | x | x | | | | | | x |
| Master of Science in Industrial Engineering | 20 | | | | | P | | x | x | | | | | | x |
| Master of Science in Information Assurance | 12 | | | | | P | | x | | | | | | | x |
| Dual Degree Executive Masters Program in Engineering/MBA with SUI | 19 | X | Cedar Rapids | | | | | | | | | | | | |

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TABLE 1 – IOWA STATE UNIVERSITY
BOARD OF REGENTS DISTANCE EDUCATION STUDY
PROGRAM OFFERINGS
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AGENDA ITEM 3g
ATTACHMENT 1
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| PROGRAMS | # of students | Face-to-face (FTF) | | | WWW still media | WWW streaming media | GIS° | Audio tape/CD | Video tape/VCD/DVD | ICN | Access Grid | Live digital capture (elluminate/Camtasia) | LMS° (WebCT) | Do students have to fulfill a residency (on campus) requirement for this program? Yes | No |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Off-campus | Location | On-campus | | | | | | | | | | | |
| Master of Family & Consumer Sciences | 201 | | | | P | | | | | | | | | | x |
| Master of Community and Regional Planning | 50 | | | | | | | | P | | | | | x | |
| Master in Education with specialization in Curriculum and Instruction | 31 | P | various | | x | | | | | | | | | x | |
| Master of Science in Statistics | 33 | | | | | P | | x | | | | | | | x |
| M.S. in Family & Consumer Science Education | 33 | P | various n | | x | | | | | | | | | x | |
| M.Ed., in Family & Consumer Science Education | | P | various | | x | | | | | | | | | x | |
| Ph.D. in Family & Consumer Science Education | 25 | P | various | | x | | | | | | | | | x | |
| Doctorate of Philosophy in Foodservice and Lodging Management (Child Nutrition Program Leadership Academy) | 15 | P | various | | x | | | | | | | | | x | |
| Certificate of Advanced Studies – Superintendent Certification | 18 | | | | | | | | | P | | | | | x |
| Bachelor of Liberal Studies | 301 | P | Ankeny | | X | | | | | x | | | | | x |
| Bachelor of Science (George Washington Carver Teacher Education Program) | 19 | P | Des Moines | | | | | | | | | | | | x |
| Dietetics Internship | 51 | P | various | | | | | | | | | | | | x |
| Master of Education in Educational Leadership | 97 | P | Mason City; DM; Oskaloosa | | | | | | | | | | | | x |
| Master of School Mathematics | 12 | P | various | | | | | | | x | | | | | x |
| Master of Public Administration | 86 | P | Des Moines | | | | | | x | x | | | | | x |
| Ph.D. in Educational Leadership | 14 | P | Ames | | | | | | | | | | | x | |
| Certificate in Empowerment Skills for Family Workers | 3 | P | Various | | | | | | | | | | | | x |
| Master of Business Administration | 188 | P | Various | | | | | | | | | | | | x |

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**TABLE 1 – IOWA STATE UNIVERSITY**
**BOARD OF REGENTS DISTANCE EDUCATION STUDY**
**PROGRAM OFFERINGS**
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**ATTACHMENT 1**
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| PROGRAMS | # of students | Face-to-face (FTF) | | | WWW still media | WWW streaming media | GIS° | Audio tape/CD | Video tape/VCD/ DVD | ICN | Access Grid | Live digital capture (elluminate/ Camtasia) | LMS° (WebCT) | Do students have to fulfill a residency (on campus) requirement for this program? | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | Yes | No |
| | | Off-campus | Location | On-campus | | | | | | | | | | | |
| Master of Education in Higher Education | 176 | P | Various | | | | | | | | | | | | x |
| Not associated with any program | 1306 | | | | | | | | | | | | | | |

°GIS – guided independent study; LMS = learning management system

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**TABLE 2 – IOWA STATE UNIVERSITY**
**BOARD OF REGENTS DISTANCE EDUCATION STUDY**
**COMPARISON OF DELIVERY METHODS**
**NOVEMBER 2005**

**AGENDA ITEM 3g**
**ATTACHMENT 1**
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| Delivery modes | Briefly describe delivery mode | Advantages[12] (list as many as apply) of using this delivery mode | Disadvantages[13] (list as many as apply) of using this delivery mode | Total # of courses in FY 05 using this delivery mode | Total # of students in FY 05 using this technology/ delivery mode | This delivery mode best used when[14] | Incremental type of cost[15] to use this delivery mode | Student requirements[16] to use this delivery mode |
|---|---|---|---|---|---|---|---|---|
| On-campus, FTF | Students travel to campus evenings, Saturdays or during the summer to take course | Allows students access to ISU Quality courses and programs with face to face interaction with faculty and other students | • Synchronous offerings limit student choices and schedules. • Cost of driving in can be prohibitive and time consuming. • Limits market area to Central Iowa | 92 | 663 | Pool of students near enough to travel to campus to participate in course at non-traditional times. | Faculty salary and time for conversion of content to digital mode. | Ability to travel to campus at specific time |
| Off-campus, FTF | Instructors travel to off-campus location to teach course; includes courses held in specialized locations: ie: geology camp, Wyoming | Instructors bring ISU research based instruction to the people in areas outside of Ames | • Synchronous offerings – limited market area • Travel costs for departments and faculty • Difficulty in recruiting instructors willing to travel | 137 | 1760 | Specific site has a pool of students  Site lends itself to instruction – ie: geology camp | Faculty salary and time for conversion of content to digital mode.  Faculty Travel cost | Student travel to site of instruction at specific time |
| WWW still media | Students take course via world wide web | • Asynchronous delivery allows students access to quality ISU instruction anytime/anywhere • Allows for on-campus instruction to be broadcast for distance delivery • Minimized time away from work attractive to employers | • Student equipment can limit their ability to download course information. • Internet connection speed in rural areas can prohibit timely access to course instruction. • No face to face interaction or discussion | 132 | 1017 | Instruction converted for delivery to wide number of students world wide | Faculty salary and time for conversion of content to digital mode.  Faculty time for course communication. | Student computer must meet minimum requirements to access course. Requires student to have access to internet connection. |
| WWW streamed media | The streaming media lectures are available as a live stream, at the same time that the course is being taught, so that the students may interact with the instructor during class time using a chat client. The streaming media lectures are also archived and available for viewing for the entire semester. | • Asynchronous delivery allows students access to quality ISU instruction at the time of instruction or download later. • Allows for on-campus instruction to be broadcast for distance delivery. • Allows on-campus students to view lectures missed of on-campus courses or to review for exams. • Minimized time away from work attractive to employers | • Student equipment can limit their ability to download course information. • Internet connection speed in rural areas can prohibit timely access to course instruction. • No face to face interaction or discussion | 93 | 656 | Instruction converted for delivery to wide number of students world wide | Faculty time for courses creation and/or conversion  Cost of equipment needed for streaming delivery method  Faculty time for student communication during course | Student computer must meet minimum requirements to access course. Requires student to have access to internet connection. |

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[12] e.g., opportunity for student/instructor interaction, easy to learn to use, etc.
[13] e.g., lack of opportunity for student/instructor interaction, steepness of learning curve, etc.
[14] e.g., convenience of audience, e.g., place bound students, etc.
[15] e.g., travel, postage, specialized equipment, etc.
[16] e.g., ability to travel, computer, high speed internet, etc.

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**TABLE 2 – IOWA STATE UNIVERSITY**
**BOARD OF REGENTS DISTANCE EDUCATION STUDY**
**COMPARISON OF DELIVERY METHODS**
**NOVEMBER 2005**

**AGENDA ITEM 3g**
**ATTACHMENT 1**
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| Delivery modes | Briefly describe delivery mode | Advantages (list as many as apply) of using this delivery mode | Disadvantages (list as many as apply) of using this delivery mode | Total # of courses in FY 05 using this delivery mode | Total # of students in FY 05 using this technology/ delivery mode | This delivery mode best used when | Incremental type of cost to use this delivery mode | Student requirements to use this delivery mode |
|---|---|---|---|---|---|---|---|---|
| GIS | | | | 0 | 0 | | | |
| Audio tape/CD | | | | | | | | |
| ICN | The Iowa Communications Network (ICN) is a fiber optic network that connects learning centers throughout Iowa. Iowa State uses an Internet-based video conferencing system, Polycom. | • Allows instruction from one site to be broadcast to other network classrooms. • High quality audio/video • Requires little change from instructors established classroom lecture style | • Audience limited to within the state of Iowa. • Cost of system and rooms affects college ability to offer course (Requires a "critical mass" of students at each site to cover costs). • Synchronous delivery limits student participation. • Students have to travel to ICN room locations • Poor display of graphical images • Scheduling conflicts of ICN rooms forces last minute notification to students. • Aging equipment in ICN rooms can affect quality of student instruction. | 21 | 139 | Instructor in one site wants to deliver to several locations in Iowa | Faculty time Room Charges Line charges Technician charges | Student travel to site of instruction at specific time |
| Video tape/VCD/DVD | Course material delivered via video tape/VCD/DVD | • Asynchronous delivery allows students access to quality ISU instruction Anytime/anywhere • A choice for those not having good internet connection speed | • No audio/video interactivity for students and faculty. • Materials must be delivered and timeliness can affect students participation • Technical issues with student computers/equipment may affect quality of Video tape/VCD/DVD | 173 | 586 | Instruction converted for delivery to wide number of students world wide | Cost of creating video tape/cd/dvd Faculty salary Cost of tapes/cd/dvd Postage/delivery costs | Equipment to play the media |
| Access Grid | Live interactive medium via web which allows audio & video interaction | Allows two way interaction through video and audio, allows for on-campus instruction to be broadcast for distance delivery | • Must have equipment to participate and deliver materials. • Permits participation in multi-institution academic programs. | 1 | 9 | Instruction converted for delivery to wide number of students world wide where discussion is needed | Equipment cost Faculty Salary for teaching and converting content Cost of data transmission | Student computer must meet minimum requirements to access course. Requires student to have access to internet connection. Equipment to access the grid. |

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**TABLE 2 – IOWA STATE UNIVERSITY**
**BOARD OF REGENTS DISTANCE EDUCATION STUDY**
**COMPARISON OF DELIVERY METHODS**
**NOVEMBER 2005**

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**ATTACHMENT 1**
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| Delivery modes | Briefly describe delivery mode | Advantages[17] (list as many as apply) of using this delivery mode | Disadvantages[18] (list as many as apply) of using this delivery mode | Total # of courses in FY 05 using this delivery mode | Total # of students in FY 05 using this technology/ delivery mode | This delivery mode best used when[19] | Incremental type of cost[20] to use this delivery mode | Student requirements[21] to use this delivery mode |
|---|---|---|---|---|---|---|---|---|
| Live digital capture (Illuminate/Camtasia) | Captures screen annotation from faculty presentation in on campus course for delivery via distance – not interactive | Allows for on-campus instruction to be broadcast for distance delivery | • No synchronous audio/video interaction . <br> • Students unable to see video or instructor (newest breakthrough will allow students to see the instructor) | 11 | 28 | Instruction converted for delivery to wide number of students world wide | Equipment Cost <br> Faculty Salary for teaching and converting content <br> Cost of converting materials for distance delivery | Student computer must meet minimum requirements to access course. Requires student to have access to internet connection. |
| LMS (WebCT) | Courses delivered via www using WebCT LMS | • Asynchronous delivery allows students access to Quality ISU instruction anytime/anywhere <br> • Allows for on-campus instruction to be broadcast for distance delivery. <br> • WebCT allows faculty to convert their courses in a systematic, consistent format. | • No live interaction with instructor and other students. <br> • No synchronous group interaction <br> • Internet connection speed in rural areas can prohibit timely access to course instruction. | 181 | 1950 | Instruction converted for delivery to wide number of students world wide | Cost of LMS <br> Faculty salary for teaching and converting content | Student computer must meet minimum requirements to access course. Requires student to have access to internet connection. |
| FTP | File Transfer Protocol – designed for transferring files over the Internet | • Transfer multiple files <br> • Failed downloads can resume at point of failure <br> • Allow numerous users to download files <br> • Access to files as soon as they are posted <br> • Once downloaded, files run off your hard drive (no longer need connection to Internet) <br> • Very secure way to transfer information | • FTP frequently fails when the data has to pass through a firewall <br> • FTP does not encrypt your username and password <br> • Risk of accidentally allowing unknown persons to upload/download files to/from server. <br> • May take a long time to download files (even with high speed Internet) <br> • Who stores these files? Must have dedicated server (always on) with large capacity. | 3 | 22 | Course information delivered to businesses on site where students can download from employer computer | Cost of Transmission <br> Faculty salary for teaching and converting content | Student computer must meet minimum requirements to access course. Requires student to have access to internet connection. |

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[17] e.g., opportunity for student/instructor interaction, easy to learn to use, etc.

[18] e.g., lack of opportunity for student/instructor interaction, steepness of learning curve, etc.

[19] e.g., convenience of audience, e.g., place bound students, etc.

[20] e.g., travel, postage, specialized equipment, etc.

[21] e.g., ability to travel, computer, high speed internet, etc.

**BOARD OF REGENTS**
**STATE OF IOWA**

**TABLE 1 – UNIVERSITY OF NORTHERN IOWA**
**BOARD OF REGENTS DISTANCE EDUCATION STUDY**
**PROGRAM OFFERINGS**
**NOVEMBER 2005**

**AGENDA ITEM 3g**
**ATTACHMENT 1**
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| PROGRAMS | # of students | Face-to-face (FTF) | | | WWW still media | WWW streaming media | GIS° | Audio tape/CD | Video tape/VCD/DVD | ICN | Access Grid | Live digital capture (Elluminate/Camtasia) | LMS° (WebCT) | Do students have to fulfill a residency (on campus) requirement for this program? | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Off-campus | Location | On-campus | | | | | | | | | | Yes | No |
| MBA - Master of Business Administration | 29 W'loo 15 HK | P | Waterloo, Hong Kong | | X | | | | | | | | | | X |
| MA -Communication Education | 9 | | | X | X | | | | X | P | | | X | | X |
| MAE - Early Childhood Education | 24 | | | | X | | | | X | P | | | X | | X |
| MAE - Educational Leadership – Principalship | 42 | | | X | X | | | | X | P | | | X | X | |
| MAE - Educational Leadership – Principalship – UEN | 46 | | | X | X | | | | X | P | | | X | | X |
| MA - Educational Technology | 12 | | | | X | | | | X | P | | | X | X | |
| MAE - Elementary Education | 16 | | | | X | | | | X | P | | | X | | X |
| MA - English | 11 | P | Cedar Rapids | | X | | | | | | | | | | X |
| MA - English – ESL/TESOL (Endorsement) | 9 / 16 | | | | X | | | | X | P | | | X | | X |
| MA - Library Science | 69 | | | X | X | | | | X | P | | | X | X | |
| MAE - Literacy Education | 25 | | | | X | | | | X | P | | | X | | X |
| MA - Mathematics-Secondary School | 13 | | | X | X | | | | X | P | | | X | X | |
| MAE - Middle Level Education | 12 | | | | X | | | | X | P | | | X | | X |
| MA - Middle School Mathematics | 7 | | | X | X | | | | X | P | | | X | X | |
| MM - Music Education | 9 | | | X | X | | | | X | P | | | X | X | |

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**TABLE 1 – UNIVERSITY OF NORTHERN IOWA**
**BOARD OF REGENTS DISTANCE EDUCATION STUDY**
**PROGRAM OFFERINGS**
**NOVEMBER 2005**

**AGENDA ITEM 3g**
**ATTACHMENT 1**
**PAGE 14**

| PROGRAMS | # of students | Face-to-face (FTF) | | | WWW still media | WWW streaming media | GIS° | Audio tape/CD | Video tape/VCD/DVD | ICN | Access Grid | Live digital capture (Elluminate/Camtasia) | LMS° (WebCT) | Do students have to fulfill a residency (on campus) requirement for this program? | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Off-campus | Location | On-campus | | | | | | | | | | Yes | No |
| MAE - Professional Development | 38 | P | Cedar Rapids, Waterloo | | X | | | | | | | | X | | X |
| EdS - School Psychology *Offered jointly with U of Iowa* | 6 | | | | X | | | | X | P | | | X | | X |
| MA - Science Education | 15 | | | X | X | | | | X | P | | | X | X | |
| Certificate - Advanced Studies Certificate in the Superintendency | 40 | | | | X | | | | X | P | | | X | | X |
| BA - Elementary Education | 46 | P | Carroll | | X | | | | X | X | | | X | | X |
| BA - Technology Management | 12 | P | Carroll | | X | | | | X | X | | | X | | X |
| Bachelor of Liberal Studies (BLS) | 205 | X | | X | | X | P | X | X | | | | X | | |

°GIS – guided independent study; LMS = learning management system

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**TABLE 2 – UNIVERSITY OF NORTHERN IOWA**
**BOARD OF REGENTS DISTANCE EDUCATION STUDY**
**COMPARISON OF DELIVERY METHODS**
**NOVEMBER 2005**

**AGENDA ITEM 3g**
**ATTACHMENT 1**
**PAGE 15**

| Delivery modes | Briefly describe delivery mode | Advantages (list as many as apply) of using this delivery mode | Disadvantages (list as many as apply) of using this delivery mode | Total # of courses in FY 05 using this delivery mode | Total # of students in FY 05 using this technology/ delivery mode | This delivery mode best used when | Incremental type of cost to use this delivery mode | Student requirements to use this delivery mode |
|---|---|---|---|---|---|---|---|---|
| On-campus, FTF | DE Cohort members come to campus for instruction during summer sessions, weekend sessions or single date sessions. | Teamwork and building of learning community. Access to technology, labs, library and other campus resources. Meeting faculty and advisors in person builds better rapport. | Student travel and accommodations. | ~100 | ~950 | When cohort is newly formed for building learning community. When curriculum requires technology, labs, library, and other campus resources. | Travel, lodging, meals for students. | Transportation |
| Off-campus, FTF | Instructor travels to site for instruction. | Meeting in person builds rapport between faculty and students. Comparable to on-campus instructional style for faculty – no need to adjust delivery methods. Convenience for students. | Requires approximately 10 students at one site to be viable. Faculty time, expense and need to travel. | ~120 | ~4870 (includes Waterloo courses, study abroad, and Camp Adventure) | When sufficient # of students is met to justify single site. | Travel, lodging, meals for faculty. Room rental fees. | Transportation |
| WWW still media | Courses using web pages as instructional materials to students. | Easily accessible, students need only Internet connectivity and do not typically login. Content accessible multiple times. This method only requires a web server not a LMS with licensing fees, etc. | Lack of communication & assessment tools provided in a LMS to support student/instructor interaction. URL must be static – constant /unchanging Security of content is not guaranteed. More difficult to ensure copyright and TEACH Act compliance. | 2 Sem.-based DE  Center for Educational Technology (CET) estimates 90% of all UNI courses make use of still media (web pages) | 15 Sem.-based DE  CET estimates 100% of UNI students access for stillmedia at some point | When non-copyrighted materials only are distributed to students or links to outside content is needed. As course supplement. | Bandwidth Faculty training Web servers and professional support staff | Internet ready computer. Access to Email for student-instructor and student-student interaction. |

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**TABLE 2 – UNIVERSITY OF NORTHERN IOWA**
**BOARD OF REGENTS DISTANCE EDUCATION STUDY**
**COMPARISON OF DELIVERY METHODS**
**NOVEMBER 2005**

**AGENDA ITEM 3g**
**ATTACHMENT 1**
**PAGE 16**

| Delivery modes | Briefly describe delivery mode | Advantages (list as many as apply) of using this delivery mode | Disadvantages (list as many as apply) of using this delivery mode | Total # of courses in FY 05 using this delivery mode | Total # of students in FY 05 using this technology/ delivery mode | This delivery mode best used when | Incremental type of cost to use this delivery mode | Student requirements to use this delivery mode |
|---|---|---|---|---|---|---|---|---|
| WWW streamed media | Live and on demand medial content can/may be shared between courses and faculty to support FTF and distance ed courses. | Provides alternative content medium enhancing text and graphics course materials. Easily accessible and deliverable to any one any where. Media accessible multiple times. Can start and stop media. Ability to instantaneously update content. Can be used to offer live content. | Requires students have skills to download appropriate players to use this content. Students need adequate bandwidth. | 1 GIS (as optional resource)

CET reports: Rod Library is making on demand content available for use at UNI from video reserves as well as other media. The following are plays via the Intranet and Internet of learning content (video, audio, etc) available on Media Servers excluding all athletics and radio station on demand and live content for FY 05.

Media Plays: 59, 513

Average Per Day: 163 | 15 GIS

See CET notes in # Courses column. | When instructors want to provide supplemental video and audio materials and when high speed Internet is accessible to students. | Dedicated server for streaming media. Bandwidth Storage and professional support staff | High speed Internet access. Plug-ins and players. Technical skills to configure computer for media use. |
| GIS | 1-1 independent study with student and instructor available in both LMS (WebCT) and print formats. | Asynchronous with semester => open enrollment students can enroll at any time, self-paced, flexible, and convenient. Students allowed 9 months to complete. Provides opportunities for independent learners. | Not appropriate for all students – requires motivated independent learner to successfully complete. | 36 web and print 13 web only 31 print only | 638 | When it meets student learning style and scheduling demands. | Envelops and stamps for print-based courses. Instructional design and development support for faculty teaching WebCT format. | Internet ready computer for web courses. |
| Audio tape/CD | Provides supplemental audio content to students. | Enhances text and graphics only course materials. Relatively low cost, low tech. and highly accessible for students. Allows students to physically have the media/content and listen unlimited number of times. | Passive delivery method – does not allow interactivity. Content can become outdated, to offer updated content media must be re-created. | 2 GIS | 35 GIS | When instructors want to provide supplemental audio materials, i.e., music and language courses. | | Playback device. |

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**TABLE 2 – UNIVERSITY OF NORTHERN IOWA**
**BOARD OF REGENTS DISTANCE EDUCATION STUDY**
**COMPARISON OF DELIVERY METHODS**
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AGENDA ITEM 3g
ATTACHMENT 1
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| Delivery modes | Briefly describe delivery mode | Advantages (list as many as apply) of using this delivery mode | Disadvantages (list as many as apply) of using this delivery mode | Total # of courses in FY 05 using this delivery mode | Total # of students in FY 05 using this technology/ delivery mode | This delivery mode best used when | Incremental type of cost to use this delivery mode | Student requirements to use this delivery mode |
|---|---|---|---|---|---|---|---|---|
| Video tape/VCD/DVD | Provides supplemental video content to students and a backup delivery method for missed ICN sessions. | Provides alternative content medium – enhances text and graphics only course materials. Allows students to physically have the media/content and view unlimited number of times Inexpensive. Provides effective backup of class session to students absent from ICN sessions. | Passive delivery method – does not allow interactivity. | 1 GIS 118 ICN | 12 GIS 428 ICN | When instructors want to provide supplemental video materials and for when students need to view taped sessions of ICN classes missed for various reasons. | Duplication and mailing costs. | Playback device. |
| ICN | UNI offers graduate degree programs, undergraduate degree programs and certificate/endorsements programs through numerous ICN video classrooms across Iowa to DE Cohorts | Provides full motion, near broadcast quality video & audio between multiple ICN classrooms to a minimal number of students at each site. Allows for combining on-campus students & off-campus students. Supports interactive instructional setting. Ease of centralized scheduling of classrooms removes tech. complexity for the institution. Standardization of equipment enables any student or instructor with minimal training to effectively utilize any of the 800+ ICN video classrooms. ICN provides a help desk for users to call if there are any technical problems. Tech. problems reported result in the deployment of ICN techn. staff to diagnose & resolve or repair the problem. Fiber phone allows for private communication between student & instructor. | Available only within state of Iowa. Occasional technical or site related problems. | 118 | 428 | When students reside in state of Iowa. | Line charges Room fees Training costs Instructional support for novice faculty. Regular maintenance, equipment replacement and technical support. | Transportation |

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**TABLE 2 – UNIVERSITY OF NORTHERN IOWA**
**BOARD OF REGENTS DISTANCE EDUCATION STUDY**
**COMPARISON OF DELIVERY METHODS**
**NOVEMBER 2005**

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| Delivery modes | Briefly describe delivery mode | Advantages (list as many as apply) of using this delivery mode | Disadvantages (list as many as apply) of using this delivery mode | Total # of courses in FY 05 using this delivery mode | Total # of students in FY 05 using this technology/ delivery mode | This delivery mode best used when | Incremental type of cost to use this delivery mode | Student requirements to use this delivery mode |
|---|---|---|---|---|---|---|---|---|
| Access Grid | | | | | | | | |
| Live digital capture (Illuminate/Camtasia) | Delivered via web using web browser and or specialized players | May be used for live or on demand courses Offers internet based interactive audio and or video with chat, live polling, document sharing for multiple attendees | User experience based on Internet speed, computer, technology, etc | | | When students are at a distance. | Server and support staff | Internet ready computer with bandwidth and specialized players. |
| LMS (WebCT) | WebCT is used as a primary delivery method for GIS and semester-based web courses but is frequently used to augment ICN and FTF on-campus and FTF off-campus DE courses. | Comprehensive learning environment providing, content delivery, communication & assessment tools. Security of content limiting access only to student enrolled in course. Facilitates compliance of copyright and TEACH Act legislation | Requires license and periodic upgrade of product. | 49 web GIS 27 Full Web (Sem) 86 ICN supplement 5 On-campus, FTF 1 Off-campus, FTF Total DE courses 168 CET reports 789 on campus academic courses use WebCT as a course supplement. | 344 web GIS 405 Full Web (Sem) 428 ICN suppl. 61 On-campus, FTF 26 Off-campus, FTF | When curriculum and content lends itself well to web delivery and when it may enhance the delivery and instruction of other DE courses. | Instructional support. Server administration. License fees and infrastructure costs. | Internet ready computer. |
| IP Based Multimedia Conferencing | Real time video and audio conferencing between specialized standards and non-standards based technologies used to support courses and bring in guest speakers from US and International locations. | Portable and easy to use. Utilizes existing Internet and Intranets available in organizations. Can connect point to point or multiple sites. Globally accessible. Students can attend courses from a variety of locations. | All users must have standards based and or similar systems/solutions for interconnectivity. Adequate bandwidth must be available, IE: 384 Kbps up and down from sites. Scheduling of resources, standardization of equipment can be a challenge. | IP H.322 conferencing used for 17 courses supported by CET including students from Russia, Missouri, Illinois, and Iowa. | | When students are outside of state of Iowa. | Video Equipment Staff support | Video Equipment/Application Computer |