eLEARNING
AT VIRGINIA TECH

eLearning Summit Recommendations Converge

On December 2, 2003, the Virginia Tech eLearning Stakeholders Summit was held. Seventy-three individuals representing 53 different departments, organizations and units from across the university participated in this half-day event. Participants were tasked with review of Virginia Tech's existing distance and distributed learning (eLearning) strategic plan, as well as identification of requirements, issues, factors, solutions and future directions for eLearning at Virginia Tech.

The Summit was third in a four-phase process spearheaded by the Institute for Distance and Distributed Learning (IDDL). Review of, and updates to the university's 2002-2006 Distance and Distributed Learning Strategic Plan were necessitated by significant changes in university structure and state imposed budget reductions after the current plan was approved.

The first two phases of this process began in spring, 2003, and effectively set the stage for a successful eLearning Stakeholders Summit. Phase One consisted of a market analysis of online learning in Virginia, Maryland, Pennsylvania and New Jersey conducted by the Center for Survey Research, and an environmental scan and benchmarking of eLearning programs at peer and top

"People want distance learning... they demand it."

Summit Participant

30 research universities. Phase Two provided Virginia Tech's college management teams and other eLearning stakeholders with key information and results from the activities of Phase One. These materials served as background and reference materials for the third phase of the process, the eLearning Stakeholders Summit.

Summit participants focused on six aspects of eLearning: 1) pedagogy and faculty involvement; 2) markets, program development and growth; 3) technology needs, requirements and plans; 4) administrative structure and processes; 5) research; and, 6) extending the university's reach.

The 35 key points/issues/recommendations identified by the six focus groups converged around four themes:

- Recognize the Value of Teaching
- Commitment to eLearning
- Academic Enterprise under Provost Office
- Clarify and Communicate eLearning Goals

The fourth and final stage of the strategic review process is in progress. Follow-up meetings with academic programs and support units are being held to clarify information. A draft revision of the university's eLearning strategic plan will be reviewed by stakeholders. Once approved through the Provost Office, it will be disseminated to the university-at-large.

Edwards Receives Initial IDDL Research Fellowship

Stephen H. Edwards, assistant professor in Computer Science at Virginia Tech feels that introductory computer science students have too long experienced the frustration of trial and error when learning to debug programs.

"Shuffling statements and tweaking expressions to see what happens can be a very frustrating approach to learning," says Edwards. He adds, "Despite our best efforts and intentions as educators, student programmers continue to struggle in acquiring comprehension and analysis skills."

To help facilitate research in more effective strategies, Edwards received the initial fellowship award from the Institute for Distance and Distributed Learning. IDDL Research Fellowships are designed to provide faculty with seed funding to initiate research, development and assessment activities in support of learning in electronic environments.

Edwards says the key to improved learning is a "reflection-in-action" approach that allows students to go through many assessment cycles for each assignment and receive constructive and detailed feedback at each step.

Stephen H. Edwards
Assistant Professor, Computer Science

Providing such rapid, concrete, and immediate feedback requires an automated assessment tool.

By changing the way assignments are assessed, it is possible to reinforce desired skills. Automated feedback also plays a valuable role in encouraging students, while also showing them where they can improve. Edwards' preliminary experiences with this strategy indicate that it helps students achieve better grades while writing software with up to 45% fewer bugs.

Ocean Engineering Enters IDDL Enterprise Fund

Last year, Virginia Tech's Ocean Engineering master's degree program began converting and developing its campus-based and video conferencing curriculum for online delivery, making it the first totally online graduate degree program within the College of Engineering.

Assistant Department Head and Associate Professor Wayne Neu, and Professor Owen Hughes, began working with Virginia Tech's Institute for Distance and Distributed Learning (IDDL) to convert course materials for the first two online offerings, "Advanced Naval Architecture" and "Computer-Aided Design of Vehicle Structures", and they have never looked back.

"The reasons for this program to be offered online are many," according to Neu. Virginia Tech is one of only four civilian universities in the country to offer a ship design oriented Master of Science degree. Neu describes


Wayne Neu
Assistant Department Head & Associate Professor

Owen Hughes
Professor, Aerospace and Ocean Engineering

the field of Ocean Engineering as "very small." With so few programs and students, distance learning is a practical way to teach these classes. Prior to their online availability, however, teaching them involved accessing teleconferencing sites. Off-campus students drove to one of five common locations each week to view three consecutive 50 minute classes—an entire week's worth of material. Homework was then assigned in one large block.

Converting classes to a completely online format provides much-needed flexibility and reduces delivery costs. Information is disseminated using a combination of synchronous (live) and asynchronous class formats. Centra software forms the basis for synchronous "real-time" classes which include group discussions. Synchronous classes are recorded, so that if a student cannot attend a "live" class, he or she can download and play it back later. Mathcad software is used for smooth transfer of homework assignments. Students who are required to travel can still attend classes using the Internet, even onboard Navy ships at sea.

As a professor enthusiastic about eLearning, Hughes has found it possible to offer a quality graduate educational experience to students who otherwise would not be able to take his courses. He is emphatic about the rigor of eLearning. "During the development and conversion of a class, it often takes 10-15 hours preparation time for every hour of instruction", he states, "these are definitely not watered-down Ocean Engineering courses."
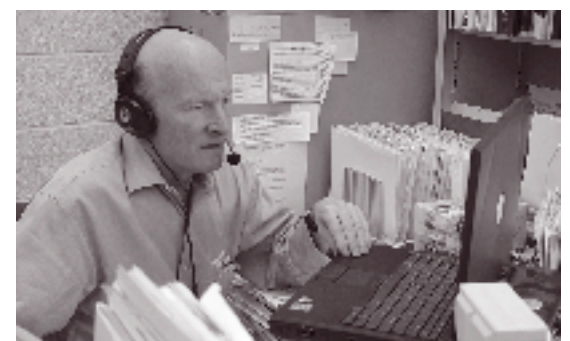
Professor Hughes providing online instruction in real-time.

The master's degree in Ocean Engineering becomes the fifth program to be included in the IDDL Enterprise Fund, a mechanism for capturing revenues and costs from selected, self-supporting instructional programs offered at a distance. The fund, in its current form, was made possible by special legislation granting Virginia Tech a three-year pilot program beginning in 2002.

Virginia Tech

About IDDL

As the central coordinating entity for eLearning at Virginia Tech, the Institute for Distance and Distributed Learning (IDDL) supports faculty and students engaged in distance and distributed teaching and learning, research and scholarship, and outreach with a wide variety of services and resources. The Institute also provides leadership in the development of distance learning policies and procedures, and works with colleges and departments to identify and cultivate new distance learning opportunities. Through its holistic approach, IDDL plays a key role in managing the multiple requirements of a successful distance learning experience. IDDL's Stakeholder/Advisory Council provides ongoing guidance to the Institute's efforts.

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Or visit our website: **iddl.vt.edu**

Mission

The Institute for Distance and Distributed Learning provides leadership, coordination, management and support to the distance and distributed learning (eLearning) activities of Virginia Tech. As an academic enterprise, the Institute works collaboratively across the university community to:
- electronically extend Virginia Tech's campus throughout the Commonwealth and beyond;
- provide an open learning environment where teaching and learning occur anytime and anyplace;
- share the practical applications of the university's knowledge and expertise to benefit society and support the economic vitality of Virginia;
- increase Virginia Tech's access to the world and the world's access to Virginia Tech;
- research eLearning environments and emerging technologies.

Vision

Virginia Tech will be a world-class leader in eLearning transcending the barriers of time and place to offer new knowledge for a global community. In support of this vision the Institute for Distance and Distributed Learning will:
- Employ a holistic approach to eLearning;
- Provide eLearning knowledge and expertise to the university;
- Encourage a learner-centered approach to education;
- Provide accessible and scalable teaching and learning resources and support services for students, faculty and staff;
- Ensure that eLearning efforts are committed to quality and continuous improvement and meet new learner requirements and expectations;
- Actively participate in and support teaching, research and outreach;
- Be an adaptive learning organization that recognizes excellence and encourages innovation and collaboration.

Core Values

In support of our efforts, the Institute for Distance and Distributed Learning affirms the following shared core values:
- A shared vision;
- An environment of integrity, trust, and open communication;
- An ideal of excellence, fostered by a belief in quality, teamwork and service;
- An esprit de corps personified by a positive attitude toward our work;
- A spirit of courage and risk-taking that nurtures creativity and innovation; and,
- An appreciation and respect of diverse backgrounds and opinions.

Masters of Information Technology Program Thrives

Virginia Tech's Master of Information Technology (VTMIT) continues to expand to meet the needs of working IT professionals throughout Virginia and beyond. Currently, 364 students are enrolled in the program which already has 103 graduates.

In October 1999, the Institute for Distance and Distributed Learning (IDDL) was charged with transforming this interdisciplinary program to an online format working closely with faculty to create dynamic and interactive learning environments. The first three VTMIT courses were offered online in fall, 2000.

The program now offers ten or more online courses each semester. Twenty-three different faculty members have taught the program's fourteen online courses since their original design, updating content and modifying assignments to meet their particular teaching style. The VTMIT faculty is assisted by "virtual" distance learning instructors (DLIs) from around the country. Students' evaluations of the online program remain high.

VTMIT program management team members: Tom Sheehan, Parviz Ghandforoush, Reggie Grant, Cindy Rubens.

2004 Marks Five Years of Dedicated eLearning Effort for IDDL

Six years ago, the Institute for Distance and Distributed Learning (IDDL) was proposed as part of a new distance learning strategic plan to provide a centralized and coordinated approach to Virginia Tech's growing distance and distributed learning efforts.

To ensure successful implementation, the proposed strategic plan for distance and distributed learning as well as the establishment of the IDDL underwent a university-wide vetting process. Accordingly, the Institute was formally established in January, 1999 by then-Provost Peggy Meszaros as the centrally organized and holistically focused academic enterprise to provide leadership, coordination, management and support to the university's distance and distributed learning (eLearning) activities and initiatives.

Current University Provost Mark McNamee praises efforts to transform the educational experience at Virginia Tech in this way. He states, "Distance and distributed learning has become an integral part of the university's academic agenda. The IDDL has worked across all areas of the university to remove barriers and support faculty and students in all aspects of eLearning."

The value of the university's decision five years ago to further invest in faculty eLearning efforts and to establish IDDL and its holistic approach is evidenced by the following:

- Distance and distributed learning is one of Virginia Tech's 17 major goals in 2001-2010 strategic plan

- eLearning identified as an academic enterprise at Virginia Tech

- Virginia Tech featured in Chronicle of Higher Education article, *How to Succeed in Distance Education*

- 95% of administrative and academic barriers identified in 1997-98 significantly overcome

- 91% of students satisfied with their online course

- 80% of student sample indicated they could not have taken the course if not online

- 96% of online students rated services the same or better than traditional courses

- 86% of academic departments involved in eLearning (Summer 98 – Fall 02)

- 12% of current full-time faculty have taught an eLearning course

- 115% increase in yearly graduate-level eLearning course enrollments over the last five years

- 120% increase in yearly undergraduate-level e-Learning course enrollments over the last five years

- 344% increase in Online Summer School enrollments in last 5 years

- 50,488 credit eLearning enrollments since Summer 1998

- 1,930 non-credit eLearning course enrollments since Spring 2001

- 1,672 eLearning course offerings since Summer 1998

- 21 degree, certificate and licensure programs currently offered through eLearning

- IDDL Enterprise Fund established as a mechanism to grow eLearning at the university resulting in over $525,000 in new tuition revenue being returned to the participating colleges to deliver their online programs, and over $75,000 in new tuition revenue being placed in the Provost's Office development fund to update existing and seed new online courses and programs.

- Creation of VTalumnNET – Dr. Steger's lifelong learning initiative for alumni

- Virginia Tech receives several national and international awards for eLearning

- U.S. News & World Report identifies four Virginia Tech online degree programs as among the best in the nation from over 2000 colleges and universities surveyed

- IDDL serves as a model for several national and international universities

Number of eLearning Courses Offered
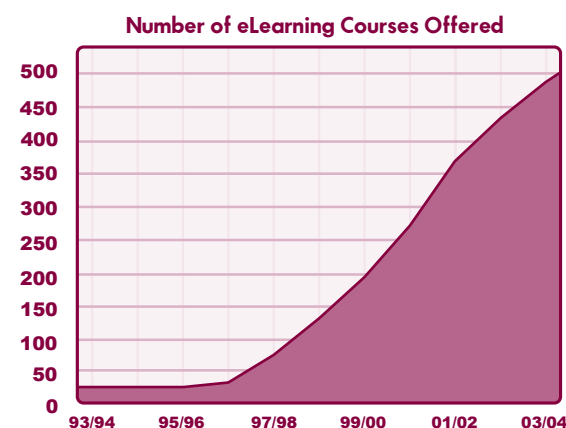
This chart illustrates the growth of eLearning course offerings over time at Virginia Tech.

Online Masters in Political Science Program Growing

When asked about Virginia Tech's Online Masters in Political Science (OLMA/PSCI) program, Scott Nelson immediately focuses on the students.

"We currently attract extremely talented students who enrich and enliven this program," he points out. "The OLMA/PSCI program reaches a niche of exceptional students who cannot attend the residential program at Virginia Tech because of family obligations, full time jobs, military service—or sometimes all three."

Scott Nelson
Visiting Asst. Professor, Political Science

Nelson has been teaching online for five years as visiting assistant professor in Political Science at Virginia Tech, where he is also currently the acting director of International Studies. He says the online program is certainly not a breeze for the students. Completion involves heavy reading and communication that Nelson describes as "intense." Students also must prepare for a slightly longer haul than the two years required by the residential program, in part because resources dictate online courses that are offered less frequently.

The OLMA/PSCI is a research degree program. Like on-campus students, every OLMA/PSCI student must write and orally defend a master's thesis. Not surprisingly, given the program's high-tech tools, the first graduate of OLMA/PSCI defended his thesis in December 2001 over the Internet in a live video conference between Blacksburg, Virginia, Washington, DC, and Frankfurt am Main, Germany.

Another student is currently a helicopter pilot who shuttles military attaché around in Pakistan, and has been in the program for three years. Nelson describes this student as, "an incredibly hard worker who contributes a unique perspective to our program."

"This level of seriousness and dedication can't help but contribute to a rich and robust dialogue among the students and faculty," Nelson attests.

Students engage in this dialogue through asynchronous discussion forums. Nelson daily checks into the forum and helps to guide discussion. He can tell when someone might be "drifting off" because their absence is noticed within this virtual learning community.

"At times, you have to reel students back into the discussion and get them involved, much like you would in the classroom", he says.

Because online delivery is convenient, flexible and provides accessibility, the OLMA/PSCI program is growing. Students have taken online political science classes over the past six years from every continent except Antarctica. The program began with an initial entering class of four, and it now has nearly fifty students working to complete their course work and conduct their thesis research.

"We need to get over the bias that online learning is somehow impoverished," says Nelson. "The Internet serves as an excellent mechanism for bringing people together around similar ideas and challenges."

According to Tim Luke, university distinguished professor in Political Science and director of its graduate committee, the OLMA/PSCI program received the eLearning Design award from the Online Academy, eLearning Design Lab at the Center for Research on Learning and Continuing Education at the University of Kansas.

Virginia Tech eLearning Market Survey Indicates Opportunity

To better identify key factors that influence online course enrollment and preferences, the Institute for Distance and Distributed Learning (IDDL) contracted with the university's Center for Survey Research for a market survey conducted in fall, 2003.

Data was collected through telephone interviews with adults, ages 18-50, possessing at least some college education in a four-state region representative of Virginia Tech's primary enrollment base. A total sample of 7,571 households was obtained from a national sampling firm and yielded 1,291 completed interviews. Of those interviewed, 50.3% reside in Virginia, 18.7% Maryland, 15.5% Pennsylvania, and 15.6% New Jersey.

The survey has a sampling error of ± 2.7%.

Highlights of Results:

- 21% of those interviewed had taken an online course(s) before

- 60% expressed an interest in enrolling in online courses within next three years.

  Of this group:

  ◦ 52% were interested in undergraduate courses;

    · 27% of this group interested in Business
    · 20% interested in Humanities/Social Science
    · 14% interested in Information Technology/Computer Science

  ◦ 31% were interested in graduate courses;

    · 28% of this group interested in Business
    · 17% interested in Humanities/Social Science
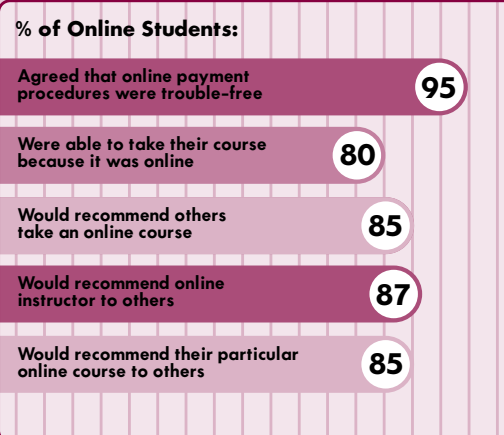   · 11% interested in Information Technology/Computer Science

  ◦ 15% were interested in special interest courses;

  ◦ 11% were interested in certificate courses;

- Over half those interested in online undergraduate courses would enroll to complete a degree.

- 96% of all surveyed have Internet at home and 81% at work.

- The majority of all respondents with interest in online courses said they were likely to enroll in the next three years

- Of those indicating interest in taking online courses, the **importance** of several factors was measured. Standout factors include:

  ◦ 98% - Courses can be easily transferred to another school

  ◦ 97% - Online access to learning resources and library

  ◦ 96% - Interaction with instructor

  ◦ 94% - Reputation of the institution

  ◦ 94% - Technical support offered

  ◦ 93% - Cost

  ◦ 93% - Students allowed to work at own pace

  ◦ 92% - Courses offered year-round

  ◦ 89% - Length of time it takes to complete courses

  ◦ 86% - Enrollment for courses at any point in semester

  ◦ 75% - Availability of a broad range of courses

Virginia Tech eLearning by the Numbers

- over 50,000 eLearning credit enrollments since summer, 1998

- 115% increase in yearly graduate-level eLearning enrollments in last five years

- 120% increase in yearly undergraduate-level eLearning enrollments in last five years

- 344% increase in online summer school enrollment since summer, 1998

- nearly 2,000 non-credit online course enrollments through VTalumnNET

% of Online Students:

Agreed that online payment procedures were trouble–free	95
Were able to take their course because it was online	80
Would recommend others take an online course	85
Would recommend online instructor to others	87
Would recommend their particular online course to others	85

% of Interactive Videoconferencing Students:

who rated the quality of audio/video reception "adequate" or above	95
who rated their IVC instructor "good" to "excellent"	84

The Natural Resources *Distance Learning Consortium*

Virginia Tech Set To Lead Natural Resources Distance Learning Consortium

David Trauger
Director of Virginia Tech's Natural Resources Program, Northern Virginia Campus

An increasing population with growing appreciation for the outdoors and natural resource-based recreation places a significant demand upon public lands.

To help meet the need for skilled employees who possess the expertise required for managing these public lands, new educational opportunities are available online to those seeking preparation for these challenges.

"A new partnership with the USDA's Forest Service and Virginia Tech's College of Natural Resources and the Institute for Distance and Distributed Learning will have global impact on developing the next generation of natural resources leaders," claims David Trauger, director of Virginia Tech's natural resources program at the Northern Virginia campus.

"In the next three years, we will have the best professors and courses in the nation on the distance learning website," he says.

According to Gary Evans, former USDA chief scientist and Virginia Tech's director of the Natural Resources Distance Learning Consortium, talks are currently underway to bring the University of Northern Arizona and University of Idaho into the consortium this year.

The consortium has developed three series of online courses: the Natural Resource Foundations series; the Wildland Recreation series; and the Natural Resource Management series. The series are designed to give Forest Service employees, and other public lands and resource recreation professionals the latest information on philosophy, theory, law, regulation, policy, and research in order to maintain or increase professional competencies.

Virginia Tech's College of Natural Resources plans to offer an online Master of Natural Resources, and a Certificate of Graduate Study in Natural Resources through the consortium.

For more information, visit: **cnr.iddl.vt.edu**

Distance Education: Keeping Up With Exploding Demand

Excerpts from *10 Challenges for the Next 10 Years*, Dan Carnevale, et al. The Chronicle of Higher Education, January 30, 2004.

- The explosion in distance-education enrollments is likely to continue over the next 10 years.

- "You're going to see more and more students not only accessing more distance learning, but also expecting it."

  - John Flores, executive director, United States Distance Learning Association

- To accommodate the expected growth in distance learning, many colleges may start buying online courses from one another and from outside vendors.

  - Sally Johnstone, director of the Western Cooperative for Educational Telecommunications at WICHE

- Institutions may eventually buy courses the way they now purchase textbooks. "The faculty will continue to be the one to teach the courses. They'll have plenty of opportunity to customize these things."

  - A. Frank Mayadas, director of the Alfred P. Sloan Foundation's grant program for online education

- As students' Internet services improve, they will expect more video and audio clips, along with other bells and whistles. "Without any question, the technology is just getting stunningly better. Educationally, we're going to be able to do lots of stuff that we haven't been able to do with largely text-based courses."

  - Janet K. Poley, president of the American Distance Education Consortium

- Colleges that don't choose to buy packaged courses and find they cannot keep up with other institutions' offerings could be early victims of a distance-education shake out that is sure to come.

- Online programs will eventually be ranked by the U.S. News & World Report the same way traditional programs are now.

  - Andrew S. Rosen, president and chief operating officer of Kaplan