Beyond Boundaries 2002

Integrating Technology into Teaching & Learning

Supplemental Material

Presented by the University of North Dakota, Grand Forks, North Dakota

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Immersive Virtual Environments

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Abstract

The North Dakota State University (NDSU) Worldwide Web Instructional Committee (WWWIC) is engaged in developing a range of Virtual Environments for Education spanning a variety of disciplines, from Earth Science to Anthropology, and from Business to Biology. These projects share a strategy, an approach to assessment, and emerging tool sets.

Introduction

The North Dakota State University Worldwide Web Instructional Committee is a multi-disciplinary group composed of faculty, staff, and students from a variety of departments and colleges, that studies learning in immersive virtual environments (IVE) for education. To do this, WWWIC designs, implements, and studies active role-based simulation environments in order to support "learn by doing" problem solving in authentic virtual contexts.

These projects are designed to capitalize on the affordances provided by virtual environments. For example, to

- control virtual time and collapse virtual distance,
- create shared spaces that are physical or practical impossibilities,
- support shared experiences for participants in different physical locations,
- implement shared agents and artifacts according to specific pedagogical goals,
- support multi-user collaborations and competitive play.

Each project has the following properties in common. They are role-based and goal-oriented; they are immersive simulations intended to promote learning-by-doing; they are spatially-oriented, exploratory, and highly interactive (Reid 1994); they are multi-user and game-like; and they employ software agents as tutors.

Project Overviews

Geology Explorer (Saini-Eidukat, Schwert, Slator, 1999) is a virtual world where learners assume the role of a geologist on an expedition to explore the geology of a mythical planet. Learners participate in field-oriented expedition planning, sample collection, and "hands on" scientific problem solving. The Geology Explorer world is simulated on an Object Oriented Multiuser Domain (a MOO; Curtis 1992, 1997; Curtis and Nichols, 1993). To play the game, students are transported to the planet's surface and acquire a standard set of field instruments. They are issued an "electronic log book" to record their findings and, most importantly, are assigned a sequence of exploratory goals. The students make their field observations, conduct small experiments, take note of the environment, and generally act like geologists as they work towards their goal. A scoring system has been developed, so students can compete with each other and with themselves.

The Virtual Cell (Vcell; White, McClean, Slator, 1999) is an interactive, 3-dimensional visualization of a bio-environment. VCell has been prototyped using the Virtual Reality Modeling Language (VRML; Hartman and Wernecke, 1996), and is to be available via the Internet. To the student, the Virtual Cell looks like an enormous navigable space populated with 3D organelles. In this environment, experimental goals in the form of question-based assignments promote deductive reasoning and problem-solving in an authentic visualized context.

The ProgrammingLand MOOseum (Slator and Hill, 1999) implements an Exploratorium-style museum metaphor to create a hyper-course in computer programming principles aimed at structuring the computer science curriculum as a tour through a virtual museum. Student visitors are invited to participate in a self-paced exploration of the exhibit space where they are introduced to the concepts of computer programming, are given demonstrations of these concepts in action, and are encouraged to manipulate the interactive exhibits as a way of experiencing the principles being taught (Duffy and Jonassen, 1992).

The Virtual Archaeologist (Slator et al. 2001a), is designed to give students an authentic experience that includes elements of a) exploration of a spatially oriented virtual world, b) practical, field-based decision making, and c) critical thinking for scientific problem solving. The objectives of the project include assessment of student performance, evaluation of instructor feedback, and incorporation of that information into the continuing design of the system. The larger objective is the distribution of this experience to archaeology students around the world.

The Blackwood Project (Slator et al. 2001b) is a simulation of a mythical 19th Century Western river town. Participants who join the simulation will accept or be assigned a role in the simulation that is primarily economic in nature. In Blackwood, gameplay is influenced by historical events and players are assigned roles designed to promote collaboration and interaction. Players assume roles in the simulation, such as a blacksmith, but are not expected to learn blacksmithing. Employee software agents actually do the day-to-day chores. The players are “only” expected to manage the retailing and business elements of the game.

Another key element in the research is devising non-standard and qualitative methods of evaluation and assessment to determine the benefit to students derived from their "learn by doing" experiences. Like the educational environment projects themselves, assessment is designed to apply across disciplines.

Assessment Results

All WWWIC projects are based on the idea of authentic assessment (Bell, Bareiss, and Beckwith, 1994), within authentic contexts, where the assessment goal is to determine the benefit to students derived from their "learn by doing" experience using our virtual environments. Our scenario-based assessment protocol is a qualitative one that seeks to measure how student thinking has improved.

When learners join the synthetic environment they are assigned goals, selected by content matter experts to be appropriate to the learner's experience. Goals are assigned point values, and learners accumulate objectively measured scores as they achieve their goals. The goals are taken from a principled set, where easier goals are followed by more advanced ones. Similarly, certain goals in a set are required while others are optional. In this way, designers can insure that highly important concepts are thoroughly covered while allowing the maximum flexibility to the learner. Subject matter experts identify teaching objectives in more-or-less traditional ways, while learner outcomes are assessed in terms of the performance of specific and authentic tasks. This is the particular strength of learn-by-doing immersive environments, that a learner's success in achieving their goals provides an automatic measure of their progress.

In addition to these outcome-based measures, all students are asked to answer open-ended scenario-based questions before and after the experiment. These scenario questions are word problems that present the student with a situation that a scientist might be confronted with. Students respond to the question with a narrative answer, which is evaluated according to an established protocol.

> Lately you and your best friend have been experimenting with “new age” forms of relaxation and health improvement. One day your friend tells you that there is going to be a Crystal Power Retreat at a nearby national park and you can’t resist.
>
> It's a beautiful summer night, and you spread out your sleeping bag after a fun day of looking at exhibits and demonstrations. Your souvenir of the day is a beautiful quartz crystal you purchased from a vendor. You are tired from the day's activities, but are unable to sleep as something hard is digging into your back.
>
> You grope around and dislodge a hard, clear, thumbnail-sized crystal.
>
> Your friend says, "Cool! I'll give you five bucks for that."
>
> What do you do?
>
> List the things you would consider in your decision.
>
> List the questions you would ask yourself, and reasons behind those questions.

Figure 1: A sample scenario from the Geology Explorer

Geology Explorer Experiment Results

Students were divided into three experimental groups: two groups completed a self-evaluation in which they rated their abilities and experience working with computers and computer software. These were asked to experience Planet Oit or an alternate internet-based activity equal in estimated time-on-task; a third group did no additional activity. Then, after the players had experienced an extended exploration of Planet Oit (or alternative exercise), they were given a similar post-test survey with different but analogous problem solving scenarios, and asked again to record their questions and impressions. These documents were then compared with the pre-test versions, looking for evidence of improved performance. If players score better on the problem solving scenarios, this creates the clear implication that they have learned from the experience. Analysis of the data shows that students who participated in the Planet Oit experience performed significantly better on scenario questions compared to those that participated in the alternative exercise or those who did no additional activity.

Table 1. Performance results of 1998 Geology Explorer experiment.

Group	Group size	Pre-experience mean score	Post-experience mean score
Control	161	9.3a	25.6a
Alternate	95	8.5a	24.4a
Geology Explorer	78	6.8a	35.9b
		F = 0.094	F = 6.320
		P = 0.393	*P* = 0.002

Scores were evaluated using a one-way analysis of variance and the Duncan's means separation test (Table 1). No significant difference (*P* = 0.393) was detected among Pre-experience group means. In contrast, Post-experience group means demonstrated a significant difference (*P* = 0.002). Among these means the Post-experience mean of the Geology Explorer group was significantly higher mean test score than the other two groups.

While a few others have shown significance in controlled studies over the years (e.g. Huppert et al., 1998; Mestre et al., 1992; Van Haneghan et al., 1992), this is the first where significant improvement in student learning provably resulted as a direct consequence of student use of an immersive (and self-paced) virtual environment, without direct intervention from a teacher or indeed any additional classroom experience at all. These results unequivocally support our methods and justify the approach.

A similar large experiment demonstrates that the Virtual Cell experience has a significantly positive effect on the ability of students to solve problems in the manner of a cell biologist. The fact that the Virtual Cell group mean value is significantly higher than the Alternate group strongly suggests the improved ability is not simply the result of computer-based time-on-task, but rather is directly related to the Virtual Cell experience. This is encouraging because the experimental effect is identical to that observed with the Geology Explorer (McClean et al. 2001).

Conclusions

Other projects related to those described above include the Virtual Tools project which is designed to create software tools that will enable content experts to craft virtual worlds for instruction with a minimum of intervention or oversight by computing professionals. These tools include software for building abstraction hierarchies, concept frames, object interfaces, virtual maps, agent attitudes, and others.

Software agents are another of the continuing pursuits of WWWIC projects (Slator and Farooque, 1998). Several of the games implement a variety of agents from simple avatars providing atmosphere, to characters the contribute to game play, to tutors that visit players when they have made an error of certain types.

Assessment is another continuing research topic. WWWIC is developing a strategy and interfaces to a subjective evaluation of student progress that relies on player recall rather than objective recognition. These assessment instruments are being developed and incorporated into the pedagogical framework under which all the projects are working.

Future plans include the implementation of the "second generation" of virtual environments which seek to do two things:

• press the role-based elements in order to create more local player contexts that promote collaboration as well as competition.

• cross discipline boundaries by incorporating, for example, social science elements into a microeconomic context.

The Blackwood game is intended to be simulations of this second generation type.

Acknowledgements

The NDSU Worldwide Web Instructional Committee (WWWIC) research is currently supported by funding from the National Science Foundation under grants DUE-9981094 and EIA-0086142, and from the Department of Education under FIPSE grants #P116B000734 and # P116B011528

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A Comprehensive Approach to Online Student Services

Robert Griggs, Bemidji State University

This session will describe the work of the Minnesota State Colleges and University (MnSCU) eStudent Services Committee. The Committee was formed in Spring 2001 to address issues pertaining to the development of a comprehensive system of online student services, accessible by both distance and campus-based students. Conference participants will learn the latest on MnSCU's efforts to provide quality student services online.

Predictors and Consequences: Voluntary Uses of Online Study Tools in Large Classes

Mark Grabe, University of North Dakota

This presentation will summarize two semesters of research investigating the use of voluntary online study resources in 200-student Introductory Psychology classes. Students were provided access to several thousand study questions, lecture notes, chapter summaries, and an online note-taking system. The research has investigated which students take advantage of online opportunities and whether or not performance differences can be associated with use of the online system. College faculty members may find the sub-topic of whether making lecture notes available online reduces class attendance of particular interest.

The Rebirth of Video Conferencing

Jerry Rostad, North Dakota University System

This isn't your father's Oldsmobile anymore. The emergence of videoconferencing over the Internet has put a new luster on this established distance education technology. From point to point connectivity to the North Dakota STAGEnet, this session promises to reveal the latest and greatest capabilities of the born-again technology.

Histoweb: An Interactive Lab Guide for Histology
Barry Timms, University of South Dakota

HistoWeb: An Interactive Digital Lab Guide for Histology

Barry G. Timms, PhD

Laboratory Section of Microanatomy 521
http://courses.usd.edu/anat521001/labguide.htm
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Summary:

HistoWeb was developed to provide an interactive self-paced learning resource for medical students studying histology. The material was made available through the Internet as a microscopy guide for selected human tissues. Digital images were incorporated into Web-based documents, using accompanying text from a previously developed laboratory guide. Advantages of this format included selected images appropriate to the structures of interest and self-assessment quizzes. A unique feature of this material is image labeling and identification of important structures. This course format has reduced the number of faculty contact hours, permitted independent study and prepared the students for computer-based laboratory examinations.

A changing paradigm in medical education and the increasing use of computers in basic science medical education has resulted in the development of many applications to assist student centered learning and life-long learning skills. Several years ago, the Histology faculty was approached by students who were interested in having a web-based resource to assist with the microscopic anatomy laboratory section. An important issue was assistance with tissue orientation and structure identification, especially during times of self-study, and when faculty was unavailable. Most students needed help with orientation of slide material provided for the course. When a partially completed web site was introduced for the first time in the fall of 1999, a survey response from the students was extremely positive regarding the usefulness of this teaching aid towards their learning experience. Re-design of the material and improvements in digital imaging permitted the use of HistoWeb as an option for the laboratory section. An on-line survey was conducted to assess the value of the material to the students' learning experience. Based upon the results, the web-based laboratory guide will likely be the primary method of instruction for this section of the course in the future.

The main components of the course material consist of a database of digitized images from the student's slide sets, with an accompanying text identifying essential components for each laboratory section, brief image notes and quiz modules. In addition, the web site also provides information about course material, texts, lecture and laboratory schedules, other useful links and a message board.

Material for the web site was taken from the students' slide sets, each consisting of 200 histology sections, used to represent 26 laboratory sections. Initial digital images from the slides were taken using a Kodak MDS 120 System (Kodak Digital Science, Rochester, New York, NY) at 1280 x 960 pixels. More recent images were captured using a DVC 1310C camera (Digital Video Camera Company, Austin, TX) at 1300 x 1030 pixels. Selected regions of these images files were then enhanced for optimum web viewing using Paint Shop Pro (Jasc Software Inc., Eden Prairie, MN). Many of the images were imported into LiveImage (LiveImage Corporation, Sarasota FL), for image mapping and labeling. A frames style web page was designed using Microsoft® Frontpage® (Microsoft Corporation, Redmond, WA). This format was considered most appropriate for the content presentation and to facilitate an interactive and easily navigated interface. The left frame of the page contains the textual content with hyper-linked images in the right frame. A series of images from different regions of the tissue, including different magnifications were available. The structural or cellular complexity of the tissues determined the number and selection of images.

The web site includes information regarding course texts, scheduling, and links to each laboratory section and search feature. A message board is used to convey information about scheduling changes and important class announcements. The material was made available to the students via Internet connections in the laboratory, with approximately eight students per computer. Students also have dial-up access for self-paced learning outside the laboratory setting.

Interactive options also included self-testing section quizzes that were created using WebQuizBuilder software produced by the Knowledge Weavers at the Spencer S. Eccles Health Sciences Library, University of Utah (Salt Lake City, UT). Additional resources included links to other similar histology web sites and links associated with clinical correlation presentations given by students during the course.

The development of this teaching material has resulted from input and collaboration with students who have taken this Medical Histology course during the past four years. An online survey was performed to obtain feedback regarding features, quality, learning support and to determine which components of the course were most helpful in assisting the students' microscopy learning skills. Most students that responded indicated that the information was very helpful in assisting with the laboratory section of the course. The students felt that the image labeling feature was extremely useful for confirmatory identification of cells, structures and regions and was often used for small group study and self-testing purposes. The quizzes were also considered valuable for reinforcing the learning of relevant material and preparing for laboratory examinations. The formal introduction of the material this year resulted in a significant reduction in faculty/student contact hours in the laboratory and noticeably fewer students attended the laboratory session. A comparison of final laboratory examination grades indicated that the introduction of HistoWeb did not affect the students' mean performance scores compared to the previous year (87.8% in 1999 vs. 90.9% in 2000).

Several Web sites have been developed for teaching, learning and reviewing the laboratory section of histology for medical students. HistoWeb has been developed during a period of four years following input, collaboration and suggestions from students who have previously taken this course. While tailored to suit the requirements of our particular program of study and slide collection, its design is flexible enough to be modified or updated for alternative text and graphic material. It is also used for review purposes after lectures in preparation for the laboratory class and lends itself to small group learning. Students were very positive about the format and design in assisting with self-paced learning, both in the laboratory setting and in personal study time. At any time during the course, and particularly before examinations, students can review the information and reaffirm learning issues, concepts and knowledge of microscopic anatomy.

This type of learning environment has several advantages. Firstly, all students have access to the same information. Secondly, digital imaging techniques permit the grouping of structures for purposes of comparison, and thirdly, the students are focused towards learning the important features of histological structure. HistoWeb is not the only resource available in the laboratory. Students indicate that having a variety of resources enhances their learning experience and facilitates the retention of important, relevant information. HistoWeb offers a convenient, versatile and straightforward presentation of microscopic anatomy for medical students that can be used in a variety of study formats.

Online Assessment: Faculty & Student Perspectives

Cole Gustafson, North Dakota State University

(See included file)

Embracing Change: Collaboration and Technological Innovation in the Provision of E-Library Services

Jane la Plante, Minot State University

This program will address issues librarians and faculty face as they work to ensure that students in e-classes achieve information literacy. An experienced e-librarian will discuss the pitfalls and prejudices that she has encountered as well as the practices and technological applications that lead to success in the provision of e-library services.

The Human Touch in Online Learning

Denise Peterson, South Dakota State University

This session provides a humanistic view to online teaching. This session will provide an overview of adult learning principles, which may be used to build a framework for an online learning environment in which a balance between a human connection, technology methodology and accountability can be achieved.

A Classroom Beyond the Screen: Expanding & Enhancing Video-delivered Class

Bob Cary, University of North Dakota

This presentation will use example materials to illustrate possibilities technology can bring to classroom and video-based learning. We will explore situations where animations, simulations and pre-produced video modules can bring a new dimension to learning in the electronic classroom. We will also examine challenges presented by technologically advanced teaching enhancements.

The Structure of English Online

Mary Margaret Pringle, University of Minnesota-Crookston

Attendees will be invited to consider design choices with respect to user needs and course content. Participants will also see successful design choices demonstrated. The presenter will discuss the criteria and student input used to refine and improve the online course environment.

Virtual Worlds for Education: A Case Study

Bradley Vender, North Dakota State University

Many groups developing virtual worlds for education experience the same process of creating content and then attempting to determine the reasons for success or failure. This session presents the lessons learned from the Virtual Cell and other WWWIC projects as warnings and sign posts for groups working on similar content.

A Collaborative Learning Community for Teachers

Dale Hoskisson & Dave Bass, Valley City State University

A Collaborative Learning Community for Preservice, In-service and University Teachers: Integrating Technology into the K-6 Classroom

Dave Bass and Dale Hoskisson, Valley City State University

In the fall of 1996, in order to help preservice teachers achieve greater success in transforming education with the power of information technology, Valley City State University (VCSU) became a notebook campus. All faculty and students are issued a notebook computer for 24 hour use. Almost all classrooms are wired for student and faculty use of the internet and with large screen video projection capabilities. Information technology is ubiquitous and a normal part of daily life on the campus. Then, in 2000, the teacher education program developed a collaborative effort with K-6 classrooms. The heart of the effort is two-fold: 1) to provide in-service teachers with technology expertise and support for their efforts to integrate technology into their curriculum, and 2) to give preservice teachers practical classroom experience in integrating technology into the curriculum.

The collaboration takes the form of development teams consisting of the K-6 classroom teacher, at least one preservice teacher, and a university faculty member. The collaboration is funded through a PT3 grant. These teams gave the K-6 teacher extra support and expertise and the preservice teacher practical experience in integrating information technology into the curriculum.

This paper will discuss the nature of collaboration and how it worked in practice for the participants in the PT3 grant.

Principles of Collaboration

Lanier (1980) defined collaboration as "a complex interplay of talents and knowledge that come together at appropriate times to produce a commonly valued end result which no single party could have produced alone"(p. 409). Thomas (1972) described a continuum stretching from conflict through cooperation and coexistence to collaboration as the end point.

Generally, there are two conditions necessary for a successful collaboration. First, the participants should feel that they are equal in status. Second, they should have mutually agreed upon goals. A third quality that also plays an important role is equal participation in the decision-making process (Million and Vare, 1997) Friend and Cook (1996) believe that the necessary characteristics of collaboration are mutually agreed upon goals, voluntary participation, and equally valued professional resources to contribute to the goals. Clevenger (1997) adds another element: the members need to believe that the collaboration serves their individual interests.

The Collaborative Projects

The teams select specific projects to work on and develop. To do this, typically, the university student would visit with the K-6 teacher and discuss what projects the teacher would like to do. The student would then discuss with the university faculty what would be the best way to accomplish the project. The dynamics of how this occurred varied greatly from project to project but there were always several face-to-face meetings with all three members to coordinate and evaluate.

A Sense of Equality

Successful collaborations involve a sense of equality among the participants. Each member needs to feel that she or he has value and is important to the effort. We were worried about helping the university students feel that they were an equal partner. This might seem difficult to achieve in a setting with one student and two teachers, one of whom would be grading the student. However, the students' reports indicated a sense of equality. This was due in part to the fact that the students usually had much more experience with the technology than the K-6 teacher. Also, the university faculty was involved mostly as a consultant and provided ideas more than direction or evaluation so the students seldom felt the need to "please the teacher." The following are typical comments from the students:

We worked side by side most of the time. After I showed the teacher how to use digital cameras, she took pictures while I helped students insert information into PowerPoint.
I showed the teacher how to use the technology. I also created instructional sheets so students could learn how to use the technology.
We were always working together. I would demonstrate how to use the technology, then we would both do it together.

The K-6 teachers had that same feeling of equality. They were the classroom experts. They knew what would fit into their classroom and what their students were ready to do. They perceived the university students as having valuable expertise in information technology and therefore as vital members of the team. The teachers made comments such as the following:

My practicum student was extremely dedicated and willing to share knowledge about technology.
I enjoyed the opportunity to work more closely with the practicum student—we approached the project as a team.

Initially, the university faculty were to be an integral part of the team. However, due to time restraints and the natural dynamics of the situation, we became outside consultants called in as needed. We usually ended up trouble shooting the problems that the students could not solve. As mentioned above, this turned out to be an advantage in helping the students feel more confidence in their value to the collaboration.

One area in which the projects did not meet the principles of effective collaboration was equal participation in the decision-making process (Million and Vare, 1997). This was by design. Because the ultimate responsibility for the success of the K-6 students rested on the K-6 teacher, so did the authority for the final decision in all matters. We felt that the classroom teacher needed to be comfortable with all activities. All team members had input in the decision making process but the K-6 teacher had the responsibility to make or approve all decisions.

Problems occurred with some teachers who were so unfamiliar with information technology that they did not feel equal or that they could really make the decisions. Also some students did not feel comfortable with going into a classroom and directing activities. To address these issues, we are currently developing a student consultant protocol. The protocol includes a set of interview questions for the student to ask the K-6 teacher about curriculum topics, available technology and software, and any specific needs. There will also be a process for contacting the teacher, gathering the information, consulting with the university teacher for ideas, then arranging a meeting with the three individuals to discuss possibilities and help the teacher make the decisions.

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Web Tools for Academic Services

David DeMuth & Tim Gerla, University of Minnesota – Crookston

Using Technology to Manage High Volume Grading in a Large Lecture Class

Dorothy Keyser, Univ. of North Dakota

Effectively managing assessment is among the most pressing problems facing teachers of large lecture general education classes. This poster session will review means by which information technology can simplify submission of assignments, streamline assessment, and facilitate student access to grades.

Notebooks, Portfolios and Abilities: The Model of Successful Assessment

Gary Thompson & Alan Olson, Valley City

Adaptive Technology at the University of North Dakota

Gerry Nies, University of North Dakota

E-Learning provides the opportunity to reach a greater number of students, including students with disabilities. These students may use Adaptive Technology. JAWS screen reader, ZoomText Screen enlargement, Naturally Speaking voice recognition and TextHelp Read & Write reading and writing software will be provided for hands on experiences.

Summer Institute of Instructional Technology

Hilary Bertsch, University of Minnesota – Crookston

The Summer Institute of Instructional Technology provides an interactive, paperless, hands-on and online learning environment for educators to be transformed into learning designers and technologists. Participants construct their learning through discovery, modeling, interactivity, and collaboration. This multi-track, customized, certification program is designed to train educators to be instructional technology professionals in both K-12 and higher education settings.

The NDSU Archaeology Technologies Laboratory Projects

James Landrum, North Dakota State University

The Archaeology Technologies Laboratory (ATL), North Dakota State University (NDSU) is developing state-of-the-art digital content and web-based applications for scholarly research and education. ATL projects include the Digital Archive Network for Anthropology (DANA)- a distributed database and archive network and digital library project- a core National Science Digital Library (NSDL) for Anthropology; 2) an Immersive Virtual Environment for Education (IVE)- a virtual reconstruction of Like-A-Fishhook Village and Fort Berthold (Site 32ML) for use in archaeology, creative writing, and history curricula, and for display at the North Dakota Heritage Center Museum; 3) Native Dancer (ND)- a virtual challenge game designed to aid in Diabetes health care management for Native American populations; 4) laser scanning, digitization, and 3D modeling of artifacts, cranial endocasts of fossil hominids (e.g., Homo erectus), and dinosaur fossils (Edmontosaurus annectens), and animation of 3D models of Neanderthal (Homo neandertalensis) hand bones, 5) Virtual Reality tours of great Midwest author's homes.

The Virtual Cell Research Support Tools

John Opgrande & Brian Slator, North Dakota State University

Research studies of educational software require a method for coordinating activities and collecting data. A system for managing all aspects of pilot studies through websites has been developed. The system currently supports a large scale study of the Virtual Cell, yet could be adapted to a wide range of applications.

Intelligent Software Tutoring In A Virtual Environment

Kellie Erickson & Ganesh Padmanabhan, North Dakota State Univ.

The Virtual Cell (VCell) is an interactive learning environment that teaches the principles of cell biology. Tutoring is incorporated throughout the game to guide students, but not deter from their independent learning. The unique features of the tutor and how it achieves its educational purpose will be presented.

Technology Education Online

Matthew Edland, Valley City State University

A Multiuser Internet-Based Geologic Mapping Exercise

Saini-Eidukat Bernhardt & Schwert Donald, NDSU

The WorldWide Web Instructional Committee (NDSU) is developing a range of Virtual Environments for Education. One of these, the Geology Explorer, is a synthetic, internet-based, educational environment where students carry out geologic investigations as a field geologist would. The newest module provides students an authentic, spatially oriented, geologic mapping experience.

Graphics & E-learning: Simulating Physical Geology in an Emmerisive Virtual Environment

Shannon Tomac, NDSU

The goal of our research in the Geology Explorer project is to evaluate the use of active synthetic environments on student learning of scientific problem-solving skills such as those that geologists would learn "in the field." This presentation will illustrate how Geology Explorer's graphical interface serves as the virtual vehicle that transports students from their seats at the computer to a geologists' field camp.

The Medium is the MOO: Immersive Virtual Environments as Creative and Interactive Spaces

Shawn Fisher, NDSU

A MOO based on the historical Like-A-Fishhook Village/Fort Berthold site is currently being constructed. This environment will provide a space in which students can interact to examine the story of the site, formal properties of the MOO medium, and what MOOs can offer to the study of history and narrative.

Student Services: The Glue That Holds Your Online Program Together

Stephanie Witwer, Minot State University

MSU Online began in 1997 as a result of a grant from the US Department of Education. The program has grown steadily and was recently given the authority to offer four degrees online. This poster will describe the long-term funding methodology for direct and indirect expenses of MSU Online.

Interaction Analysis and Teacher Behaviors: Digital Video to the Rescue

Warren Gamas & Neil Nordquist, Minot State

The Online Learning Experience: Supporting Students

Hillary Bertsch, University of Minnesota – Crookston

Learning to think like an online student provides a new perspective for designing more efficient and practical solutions to help distance students succeed. Serving students at a distance requires you to determine the needs of online students, rethink processes in place for traditional students and then figure out just how those two endeavors can work together. Through first-hand accounts of successful and not-so-successful attempts to serve online students, participants will learn what options and obstacles they may have on their own campuses and what issues to be aware of as they set out to develop new online learning programs. Participants will also benefit from research, evaluations and surveys collected at various stages of the design process.

Advanced Uses of Multimedia in Course Development

David Penrose, North Dakota Tribal College Association

This session explores the use of both existing and emerging technology in the education. Participants will learn about digital publishing, streaming media, and tools for creating Computer Based Instruction. The technology is advanced, but the tools are simple.

Microbes are Everywhere! Why not in my course?

Jerry Knutson, University Minnesota – Crookston

This session is an explanation of one teacher's attempt to develop a distance-education course opportunity in the life sciences through the use of power point slides, interactive reviews, tutorials, video clips, games, required on-site laboratory experiences, and websites.

Creating Online Learning Communities

Linda Cresap & Lori Willoughby, Minot State University

Learning communities have been identified as a means for engaging student actively and collaboratively in their learning. This session includes an overview of learning communities and the roles both faculty and student play in online learning communities. Examples of how attendees might incorporate online learning communities into their campus and online courses will also be discussed.

Using Blackboard for Pre-MBA Accounting Courses

Joann Segovia, University of Minnesota – Moorhead

Joann Segovia
Assistant Professor
Minnesota State University Moorhead

Course: Accounting for Pre-MBA

Offered through: University of North Dakota

Course Designer: Joann Segovia and publisher materials from McGraw Hill

Students: Pre-MBA students without a business major and the accounting pre-requisites for the MBA program.

Course purpose: complete online course except for some assessments. The course combines two 3-credit introductory accounting courses required for business majors into one 3-credit course that fulfills the prerequisite for the MBA program. The course addresses financial and managerial accounting concepts and practices oriented towards the decision-maker.

Course technology platform: Blackboard

Key features: Three Blackboard course sites are used: two provide publisher materials for the texts and one is developed by the instructor to provide the syllabus, learning objectives, PowerPoint presentations, and student grades.

The on-line course's learning activities will be demonstrated. Interactive lectures provided by the publisher include questions that students may click an icon to access the answers via another page, PowerPoint slide or Excel spreadsheet. Definitions of new terms are accessed with a click of the mouse. Each chapter includes a practice assessment quiz from the text author and an assessment by the instructor that is automatically recorded in the grade book.

Access Details: Guest access will be provided by contacting Joann Segovia at segovia@mnstate.edu

Click-It! Technology Tools for Web-based Audio Streaming Presentations

Henry Borysewicz, University of North Dakota

HTML-eZ is an online course management system with integrated streamed audio/graphics presentation software called Click-It. Developed at UND, it is faculty driven and user friendly, and an evolving alternative to commercial products like WebCT or Blackboard. Come see how easy it is - instructors say it's actually fun to use!

Lessons Learned and Best Practices of Student Services

Teresa Loftesnes & Mark Timbrook, Minot State University

(See included file)

Teaching Online in Higher Education: An Online Workshop in Online Pedagogy

Douglas Young, University of Texas – Pan Am

(See included file – requires PowerPoint)

Digital Portfolios in the Basic Speech Course

Daniel McRoberts, Shannon VanHorn, Valley City State University

This panel will present the impact of technology in the basic public speaking course at Valley City State University. Presenters will explore the benefits, assessment issues, challenges, and course changes that have occurred in response to a required digital portfolio assessment. Sample portfolios created by students will be shown.

Introduction to Physics & Laboratory – Online

David DeMuth, University of Minnesota – Crookston

Web-applications were developed at UM-Crookston under the Linux OS where open source, server-side Perl scripts and MySQL are used to deliver interactive platform independent content for introductory physics courses. Utilities include a) lecture preparation, b) polling, c) homework entry and a d) log/notebook. Here, we showcase our work and the functionality of Linux.

Electronic Reviews: A Link to Ongoing Assessment and Evaluation

Margaret Shaeffer & Corey Quirk, University of North Dakota

Accountability and assessment extend beyond the daily tasks of teaching and learning into the arenas of program assessment and evaluation. This session describes one academic unit's experiences in conceptualizing, designing, developing and implementing an electronic review for a national accreditation visit. Lessons learned, successes and continuing challenges will be shared.

Recruiting and Retaining Faculty in Distance Education Programs

Jane Sims, University of Minnesota – Crookston

Understanding motivators and barriers to faculty participation in distance education is essential in supporting this growing market. Research indicates intrinsic motivator and extrinsic inhibitor indicators, with differences among administrators, distance education faculty, and non-participating faculty, are keys to recruitment and retention. UMC proactively addresses concerns and uses a unique compensation model.

Preparing Pre-service Teachers to Use Technology

Cindy Grabe, University of North Dakota

The Preparing Tomorrows Teachers to Use Technology Grant (PT3) involves students in learning how to construct an authentic learning experience that involves the student, the teacher, the school and the community. This session will discuss how pre-service teachers to work effectively in a classroom with students, including the integration website construction.

Integrated Mathematics: Computers in the Classroom & Laboratory

Mark Parker, Carroll College – Montana

Integrated Mathematics: Computers in the Classroom and Laboratory

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Abstract: For the last 6 years, the Mathematics, Engineering, and Computer Science department at Carroll College has been a part of the NSF Project InterMath consortium (http://www.projectintermath.org). The focus of our involvement has been on the development of an innovative curriculum which is technology enriched, interdisciplinary, and topically integrated. All of our courses have a significant computer component, with many meeting at least 1 day per week in the lab. In this paper, we share our experiences on how to bridge the gap between using technology as an illustrative tool versus integrating it completely into courses, where some topics are only covered in a technology setting rather than both via lecture and lab. Specific examples of topics and materials for courses ranging from calculus, linear algebra, and differential equations to numerical methods, discrete math, and optimization will be presented. The ideas on technology utilization are directly applicable to most mathematics curricula, even those that don't have the topically integrated curriculum that Carroll does.

Background: Carroll College, dedicated in 1909, is a 4-year Catholic liberal arts college in Helena, Montana. Reflecting our motto "Not for school, but for life," Carroll's curriculum emphasizes career preparation as well as the liberal arts and sciences. The Department of Mathematics, Engineering, and Computer Science supports BA degrees in civil engineering, computer science, and mathematics, as well as a 3-2 program in engineering.

Recognizing the dramatic impact that technology has had and is having in the world of applied mathematics, our department has spent the last 6 years formulating and implementing an innovative curriculum that is designed to engage students in the art of mathematics while focusing on a wide array of applications. This effort has resulted in changes in both what is taught in the mathematics classroom and how it is taught. Through our involvement in Project InterMath, we have developed our new curriculum in consultation with others in the consortium, including The United States Military Academy at West Point and Harvey Mudd.

A New Curriculum: When we began our curriculum development project in the early to mid 90's, we adopted the following goals and objectives:

- to create an integrated and interdisciplinary curriculum that is applications oriented and makes extensive use of calculator, computer, and information technology
- to make the curriculum appealing to students so that it fosters excitement for learning, enables students to apply mathematics, and develops skills for the workplace by promoting teamwork and by requiring oral and written presentations.

In presenting mathematics as a unified topic, we are preserving the beauty and integrity of the subject, while focusing on the solution of meaningful applications. Our curriculum development has matured, but remains in a state of flux as we strive for new ways to incorporate technology into our classroom. Our plan encompasses all courses taught in the mathematics department; however, the most dramatic content changes have taken place in the first two years in our mathematics sequence.

The first two years of our program in mathematics now consists of four courses, the first two being 4 semester credits each and the second two 5 credits each. We have integrated calculus with discrete dynamical systems, linear algebra, differential equations, probability and statistics, and the use of calculator and computer technology. Interdisciplinary Lively Application Projects (ILAPs), where students work in small groups, are now a fundamental component of this curriculum, and they have helped greatly in making the integration of mathematical topics very natural. Our classes involve student interaction and group work; combined with computer presentations and labs. Additionally, all of our courses require the use of a graphing calculator with symbolic manipulation capabilities, and most courses have formal computer labs in each course each week. We use spreadsheets, *Mathematica*, and SPSS as our primary computer tools.

The Role of Technology:
The explosion in technology capabilities has radically changed what we do in the classroom now. We make use of both computer labs (up to 25 desktop machines) and laptops with projectors for use in the classroom. Our approach for all classes is closer to the idea forwarded by J. Jerry Uhl with his *Calculus and Mathematica* work – students will learn by doing. We don't have the resources available to teach all of our classes in the computer lab daily. Rather, each class has one day per week set aside as a laboratory day, and topics that lend themselves most to an exploration by students are presented this way. In our non-majors statistics, difference equations, and operations research courses, our students spend this time learning to model and analyze data with spreadsheets. A single lab, written with exploratory questions to guide the students through critical concepts, can replace one or more days of a traditional lecture.

Our major's courses also rely heavily on the computer lab. For instance, my Numerical Computing and Visualization course spends only 1 day per week in the classroom and the remaining time is in the lab. With each new topic in the course, we spend a day in class introducing the topic, and then spend the remainder of the week in the lab. Students have the opportunity to visually explore the numerical process, and also the computing power to derive the method from its foundation (e.g. in Taylor Series). Students come out this course with a strong understanding of the applicability of different techniques to real world problems, as well as a solid theoretical foundation.

For non-computer lab days, my 50-minute class typically breaks down as follows. The first 5 to 10 minutes is spent working through miscellaneous homework problems. A computer demonstration or lecture introduction of 10 to 15 minutes follows. The remainder of the period is spent with the student groups engaged in a concept-based worksheet. Here, students have traditionally worked with calculators. We are experimenting this year with having students work in groups on a wireless network of laptop computers. Examinations are given in the computer lab, so that students have access to all appropriate resources.

For specific examples of technology use, including lesson plans and computer labs, please visit my conference web page at http://web.carroll.edu/mparker/beyondboundaries/home.html.

Transition to Distance Learning:
At Carroll College, we currently have no distance-learning program, although we make use of many of the technologies currently available. In all my courses, assignments are made via course web pages, with updates, modifications, and supplements given out via course discussion boards. While my computer labs are written to have student-teacher interaction, as long as students have the appropriate software (i.e. *Mathematica*, spreadsheet, stats package) and a common virtual lab time with chat room, there is no reason that these labs couldn't be used in a distance-learning environment.

It is interesting to note technology is enabling a "mathematics classroom shift", where we push the traditional "lecture" back to the students in the form of out-of-class reading and supplements (computer and written) and spend class time solving problems (doing homework). Reading outlines combined with on-line quizzing capabilities can help students mature in their mathematics text reading skills. This in turn provides quick feedback to the instructor for where to focus in-class lessons (or distance-learning chat sessions). Time in class can be spent exploring real world problems, which are best modeled via computers.

Resources

Conference talk:
http://web.carroll.edu/mparker/beyondboundaries/home.html presentation, example materials and labs

NSF-sponsored mathematics curriculum projects:
http://www.projectintermath.org Project InterMath web page

http://www.math.duke.edu/education/ccp/ Connected Curriculum Project
web page

Technology and Mathematics:
http://www-cm.math.uiuc.edu/ J. Jerry Uhl: Calculus and
Mathematica

Language Acquisition via Net-Based Course: Considerations Upon Developing and Teaching

Tatiana Nazarenko, University of Manitoba

BEYOND THE BOUNDARIES CONFERENCE on INTEGRATING TECHNOLOGY INTO TEACHING

ONLINE COURSE SHOWCASE # 5. Language Acquisition via an On-line Course: Consideration upon Developing and Teaching the WebCT Introductory Russian Language Course

Introductory Russian language course (052.130) is one of 121 courses from seven faculties (Agriculture and Food Sciences, Arts, Education, Nursing, Physical Education and Recreation, Science, and Social Work) offered by the **Division of Distance Education, University of Manitoba.** It is one of the courses available in the **Bachelor of Arts Program.** The program offers the largest number of DE courses with 15 departments represented. Majors in this program currently available in Canadian Studies, Geography, History, Political Studies and Sociology. This course Introductory Russian has been offered since 2001/2000 academic year. It provides flexible access to the **Department of German and Slavic Studies** degree credit course (6 credit hours) and fosters the academic success of students through innovation in course development and delivery.

Distance education (DE) courses differ from conventional face-to-face courses in that the student and instructor are physically separated from one another but are linked via technology (e.g., telephone, e-mail, or print). Since each instructional technology has distinct pedagogical implications for course design, the structure, supporting materials, and learning activities of face-to-face Introductory Russian course were redesigned for distance delivery.

The primary designers of the course are:

Content specialist	**Tatiana Nazarenko**, Ph.D. Assistant Professor Department of German and Slavic Studies, U of Manitoba
Instructional designer	**Leona P. Dvorak**, Ph.D. Distance Education Program Continuing Education Division, U of Manitoba

Introductory Russian is designed for students with little or no knowledge of Russian. It provides an introductory study of the phonetics, grammar, and vocabulary of the language. The course follows a four-skill approach to language acquisition (listening, speaking, reading, and writing) emphasizing the development of communication ability. Grammar is taught as a necessary tool for communication, not as a goal in itself. The cultural and sociolinguistic information intertwined within the material familiarizes students with some of Russia's contemporary realities and cultural heritage. Authentic Russian web-sites, audio and video materials (animated films in particular), are used to build and improve student’s comprehension skills.

The students taking on-line Introductory Russian course are expected to demonstrate the same level of language proficiency upon completion the course as students enrolled in a face-to-face course. The same final exam is administered to both distance education and regular students at the same day during the spring exam session.

Introductory Russian is targeted at undergraduate students as well as at graduate student who need the knowledge of Russian for the graduate program completion. This course is also directed at individuals who are just interested in the language without being part of an academic program.

Like other DE courses offered by the University of Manitoba, Introductory Russian was developed in **WebCT format** (**3.6.3.8 Standard Edition**). Three delivery modes are employed to provide this course:

a) independent study

- print-based course materials: textbook, workbook/lab manual;

- supplementary audiovisual content: animated films and CD-Rom software which provides an interactive version of many learning activities;
- web-site developed by the textbook's publishers;

b) direct interaction with the instructor via telephone/ audio-conference;

c) net-based study (entirely online):

- course information including required textbooks, details of term work, assignment due dates, and final exam schedule;
- instruction and learner support including all course manuals, study skills material, communication tools (largely for asynchronous on-line projects), DE student and instructor handbooks, and course management tools (instructors and students) such as confirmation of date of receipt and return of assignments, display of term marks, and optional online submission and return of term work.

There is also a potential to employ the fourth delivery mode**, Campus Manitoba**, a distance education partnership of Manitoba post-secondary universities and colleges, providing program support through the delivery of University of Manitoba courses to 16 sites in rural and Northern Manitoba.

The Distance Education Program provides, at no costs to students, e-mail and telephone contact with the DE instructor. The DE Program also provides the required online materials and learner supports via WebCT:

Further information about the course can be obtained from the following contact people:

- for guest access to view the course,Janice Miller, Senior Programmer at millerjd@ms.umanitoba.ca

- for questions related to the course content and teaching

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Simulating Ethnic Conflict: Utilizing an Online Approach for an In-class Exercise

Thomas Ambrosio, North Dakota State University

Simulating Ethnic Conflict:
Utilizing an Online Approach for an In-Class Exercise

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Problem-based and cooperative learning methods can be introduced into the classroom effectively in order to heighten student interest and learning. One such method is the interactive, classroom simulation, which immerses students into a real-world environment and has them assume roles, either as individuals or representatives of a group. The role-players then interact with each other in order to solve problems or achieve some set of faculty-designed goals. The ultimate goal of this exercise, from a pedagogical standpoint, is to foster a deeper understanding of difficult and complex material than the students would achieve through traditional lectures. This paper will examine and in depth simulation designed for my upper-division course on ethnic conflicts. I will first provide brief description of the simulation itself. I will then examine a number of issues involved in designing, running and assessing the simulation, including: the basics of how to put together an in depth classroom simulation; the opportunities and difficulties of placing materials on-line; the incorporation of on-line materials with the in-class exercise; how to run the simulation itself; and student assessment of learning. Throughout I will include some thoughts regarding room for improving the simulation for future courses.

The Independence of Dacia

In an effort to help my students in my 400-level Ethnic Conflicts course better understand the causes of ethnic conflicts and the difficulties of consensus-building in ethnically-divided societies, I developed a simulation which transforms students into delegates at a constitutional convention for the fictitious country of Dacia. For this simulation, which is tied to the first half of the course examining the causes of ethnic conflicts, all information was provided on-line, including student position papers, proposed constitutional provisions, and, upon the completion of the simulation, the wrap-up exam <http://www.ndsu.nodak.edu/ndsu/ambrosio/dacia/>. The in-class activities last at least two weeks and a final assessment of student learning is given.

According to the history provided to the students, Dacia has recently emerged as an independent country following the collapse of a larger multiethnic federation, the Federal Republic of Samartia. The population of Dacia is divided into two major ethnic groups: the Dacians (76 percent) and the Anarti (21 percent), separated by ethnic, linguistic, cultural, and religious differences. This region has seen its share of bloodshed, with the most recent incidents occurring approximately fifty years ago. Since then, the country was ruled by an authoritarian government which suppressed expressions of nationalism. However, that government and the federation itself has collapsed, forcing Dacia to develop a constitution of its own and determine a *modus vivendi* for its two ethnic groups.

Students assume the roles of delegates at Dacia=s constitutional convention. In previous exercises, five factions have been portrayed, three representing Dacians, one the Anarti, and one outside group (the Europa Union). Students are assigned to groups (and, if applicable, factions within those groups) and required to meet with their group outside of class in order to determine their group=s position on a number of issues relating to how Dacia should be ruled and any constitutionally-provided minority rights. The groups then submit their position papers on disk and they are placed on-line at least a week before the simulation begins. At this point, the simulation is ready to be run in class.

Simulation Creation

When conceiving of this (or any other) simulation, it was necessary to keep four things in mind during the creation stage:

$ *goals* -- What are the purposes of the exercise?
$ *scale* -- How detailed/long should the exercise be?
$ *creativity* -- Will the exercise be interesting for the students?
$ *time investment* -- How much time will be spent creating it?

Goals. The most important issue to consider is the set of goals to be accomplished through the exercise. Without this, the simulation will run into a number of problems; the worst of which is that it will waste classroom time without achieving clear objectives. The goals of the simulation are inherently tied to the course materials and could, for example, teach or reinforce theoretical concepts through active learning. Additional goals could include: exposing students to situations and choices not normally found in their daily experience; promoting cooperative learning from peers and enhancing students= ability to work in groups; or encouraging students to role play and thus increase their ability to empathize with different points of view.

For this simulation, my goals were three-fold. My primary goal was to provide students with a hands-on experience. Obviously this is more difficult to do for ethnic conflicts than for other subjects. Building a model bridge which will hold a brick in an industrial engineering class, for example, is far more possible in a classroom setting than ethnically cleansing the classroom down the hall. In addition to the war crimes implications, large scale, potentially violent, political events are difficult to scale down into the classroom. Moreover, I have found that students in the United States generally, and the Upper Midwest in particular, usually do not conceive of ethnicity in the same way that those outside of the U.S. do.

My secondary goal was to reinforce the readings from the first half of the course by having the students, in effect and sometimes unknowingly, act out the theories in the simulation. Rather than >scripting= processes or actions, the simulation itself usually brings out policy positions in line with previous approaches to ethnic conflicts -- for example, the potential of territorial autonomy for an ethnic group eventually leading to secession was not discussed in class, but many students understood that any >compromise= of autonomy for the Anarti minority could lead to problems for Dacian territorial integrity.

Finally, by design, the simulation is based upon group work and coalition building. Students are required to work with their peers to establish a common position for their group and, since no group has the ability to establish a constitution on its own, groups must work together and reach compromises in order to pass constitutional provisions. These skills are necessary for the modern workforce and I have found that the students usually work well together.

In short, I wanted to present to the students the difficulties of policy decisions in multiethnic situations -- something that approximates the real world. Often, as my students found, they were selecting between a series of bad options, rather than between good and bad. Not only did this give them a better understanding of the problems facing multiethnic states, but also the dilemmas facing U.S. policymakers attempting to navigate conflicts.

Scale. The scale of any in-class simulation is dependent upon the constraints of the course, how much time the professor can spend on the exercise, and the inevitable trade-off between problem-based/cooperative learning and content. Although some would argue that they can get through the same

amount of content with PBL/CL, I have found that this is not the case. Instead, I have found that the trade-off is between the amount of content we get through in the course versus how well they understand it; and they do seem to understand the material better through such a simulation. However, it is important to understand that less content can be covered in the class since a simulation such as this does take time. However, shorter, one-class simulations are also possible. In fact, when conducting this simulation, I have found that the students want a longer amount of time and that they fell rushed to pass something at the end. This is obviously a problem, though not necessarily removed from the real world. For example, the European Union set a 23 December 1991 deadline for any state seeking independence from the former Yugoslavia. Bosnia-Herzegovina had to decide very quickly whether to seek independence or stay within a Serb-dominated, rump-Yugoslavia. The time needed to seek consensus between all three ethnic groups (if such consensus was possible at all) simply did not exist and this ultimately led to the four-year civil war. Thus, artificial time constraints can, in some instances, approximate Areal-world@ situations.

Another problem, in terms of scale, is the size of the groups and the number of groups. I have found that unless I want rather large groups (5-7), I needed to break the class into two, each running the simulation independently on separate days. This problem also can be resolved with the addition of more groups. For example, I intend to >complicate= matters by adding two additional actors to the simulation: the Republic of Anarti (approximating Hungary) and the Albany Commonwealth (approximating the United States). However, it is necessary not to have too many groups since coalition-building will likely suffer as a result.

Creativity. In order to hold the students= interest and to create something approximating a real-world environment, the simulation must be rich enough to provide enough detail to make it believable and to allow students to role-play, but not so detailed that the students either get lost or the burden on the professor is too much. The Dacian simulation includes a historical account, demographic data, maps, and details of the positions of the various sides. What has helped tremendously is that I took a real-world case, added elements that the students might not be

familiar with, and repackaged it as an alternate world. The Dacian simulation is loosely based on a mix of Romania, Yugoslavia, and the former Soviet Union. The symbols (which I reproduced on name-tags to help build a sense of group coherence) were largely taken from symbols of Romanian nationalism and political parties I have found on the web. The quotes, likewise, are taken almost directly from Romanian and Serbian politicians. The country and regional names are largely Roman in origin. Thus, with a minimum amount of creativity, I was able to develop a complete world with names that are unfamiliar, but not obviously made up.
I have found that students actually wanted more information, either about the history or the groups themselves. Between iterations I have been able to incorporate these requests into the information provided to the students at the simulation=s outset, but during the simulation I have had to make these up as I go along. I think that the students= desire for more information is a reflection both of their interest in the simulation and their understanding of the complexities of the real world. This places a higher burden on the professor, who needs to anticipate students= informational needs, but it makes for a more satisfying experience for all involved.

Time Investment. The amount of time necessary to create an in-class simulation is directly related to one=s overall creativity, skill with HTML, and the scope of the exercise. By utilizing pre-existing cases and modifying it for my needs, the amount of time taken for gathering information and placing it in a simulation format was greatly reduced. While one can certainly save time and energy by taking a pre-existing case wholesale and transferring it into a simulation format, this is potentially problematic. Students may come to the simulation with pre-conceived notions or additional information which can

detract from the purpose of the exercise. For example, it might be difficult for students to realistically assume the position of a Bosnian Serb if they believe that the Bosnian Serbs were responsible for the war and that their political interests were illegitimate -- certainly this was the position of the U.S. government and many academics. Moreover, if one is running a historically accurate simulation of pre-WWII Europe, it is unlikely that the students will be willing to disregard their historical knowledge of Nazi Germany=s expansionist aims and forego the opportunity to stop Germany in the Rhineland. While it is important not to underestimate the role-playing abilities of our students, truly hypothetical scenarios will make it easier for students to lose their own identities, preconceptions, and >real-world= knowledge. This many not be true for all students, however, and may likely be of increasing relevance for lower-division students.

On-Line Opportunities/Difficulties

The Internet can serve as both an opportunity and an impediment to the functioning of an in-class simulation. On the plus side, by putting the materials on the web it is easier for students to access them at their leisure and can save money by having the students print out copies of the simulation themselves (rather than the department incurring the cost, for example). Moreover, by placing the simulation information on the web, students can access it instantly, without having to wait until photocopies are made or the next class meeting.
The biggest problem with an on-line simulation is the potential skill level of the professor: if the professor has access to web-page managers and/or has knowledge of HTML, then the web component is far easier; if not, then the possibilities of integrating the web and the simulation will be severely hampered. Another impediment is the very isolated nature of the Internet: students access and read the materials individually. If there are questions, the students will not be immediately able to contact the professor -- contrast this to an in-class hand-out in which immediate feedback or questions is possible. Nevertheless, the advantages are greater than the disadvantages.

Incorporating the Web into the Classroom

This simulation does not contain an on-line, interactive environment; e.g., chatrooms, electronic bulletin boards, etc. Instead, all student interaction is conducted face-to-face, either in-class or out of class group meetings. The Web is used primarily a resource for information distribution: either the initial information for the simulation itself or student-created constitutional provisions. Nevertheless, the entire simulation is placed on the Web and access to it during the simulation is crucial. If this is not possible -- e.g., by the lack of computer resources in the classroom -- overheads of the web pages can work just as well.

Running the Simulation

The in-class portion of the simulation will obviously be different for each exercise, depending on the needs and content of the course. For this simulation, it begins with a call for any questions that the students may still have. After answering them, I provide each group with approximately ten minutes to present their proposal. Each group designates a speaker or speakers and they are expected not to simply read their constitutional provisions (students are expected to have already read each other=s provisions before the first class meeting), but rather to give an introductory overview speech, in which they provide their group=s vision of the future state of Dacia.

The primary components of the in-class portion of the exercise are the negotiations on constitutional provisions. As the professor, I >float= in the classroom, listening in to conversations and offering any information that the students may require (e.g., help with wording or providing additional real-world examples). When there are sufficient numbers or interest in voting on a given proposal, students are permitting to give a speech on their group=s position before voting or entering into further negotiations. Once all (or most, depending on time) provisions have been passed, I place the constitution of Dacia on-line for the assessment portion of the exercise.

While this may not work for all classes or professors, I tend to replace a more structured or formal procedural outline with greater flexibility. However, it is always necessary to ensure that the students stay >on topic= as much as possible and that the class simply does not flounder on inconsequential issues.

Student Assessment of Learning

After the constitutional provisions have been adopted, student assessment is conducted in two ways. First, there is a post-simulation meeting in which the students and I discuss the nature of the negotiations, any themes that arose, and the final outcome. I also gather student suggestions for how to improve the simulation (some of which are outlined in this paper=s conclusion). My goal in this session is to connect the processes and themes in the simulation to the articles/books which we have read earlier in the course. I have found that, through the simulation, students developed a better understanding of the theoretical dynamics found in ethnic conflict situation and, in many cases, had an intuitive sense for theories which we did not cover previously in the course.

The second assessment tool is a more structured attempt to get the students to connect their experiences in the simulation to the literature on ethnic conflicts. Students are given a take-home exam in which they must analyze the relative likelihood of an ethnic conflict erupting under the new Dacian constitution (which is also placed on-line). This take-home essay constituted the students= midterm exam and served as a way to comprehensively cover the first half of the class. In the future I would like to add a group assessment component to the simulation by allowing members of the group to evaluate each other.

Preliminary Conclusions

Overall I have been pleased with this particular simulation. Students have reported to me that they liked it and this has been reflected on the student evaluations. It is a good and educational way to break up the ordinary pattern of student readings and lectures. I have found that most students take their roles quite seriously, with strategic thinking and creativity being important benefits to the class. In the final assessment portion of the exercise, students have demonstrated a better understanding of the causes of ethnic conflicts and the political processes of multiethnic polities than they did after doing the readings and hearing me lecture. In short, in-class simulations can not only bring out the creative side of professors, but, more importantly, enhance student learning.

Access or Obstacle? Is Your Class Available to All Students?

Gerry Nies, University of North Dakota

The session will show how students with disabilities using adaptive technology have increased access to the Internet and e-learning. There will be a discussion of technology such as: voice recognition, voice output and writing programs. Recommendations for making the site more adaptive technology friendly will be given.

Digital Video & Assessment in Spanish and English Courses

Julee Russell & Kay Kringlie, Valley City State University

This session will present ways of and rationale for integrating digital video into assessment tools in Spanish and English courses. Specific course projects will be presented, including the following: project description, evaluation criteria (for the instructor and the student), sample student responses to the project, and examples of student self-assessment of the project.

East Meets West Online: A Singapore-U.S. Instructional Interaction

Adonica Schultz-Aune, University of North Dakota; & Dan Lim, University of Minnesota – Crookston

This work explores the experience of instructors from Singapore and from Crookston, Minnesota; USA who met at a Summer Institute for Instructional Technology where outcomes suggest that the Internet may be the equalizer for East to meet West in academic interchange.

It’s Not as Impossible as It Seems: Teaching Interpersonal Communication Online

CK Braun, University of North Dakota

Ironic Isn’t It?
Teaching Interpersonal Communication Online

Background Information Sheet

Course Title:
Fundamentals of Interpersonal Communication (Comm 212)
Correspondence Study, Division of Continuing Education
University of North Dakota, Grand Forks

Primary Course Designer:

CK Braun, Curriculum Designer & Instructor
Division of Continuing Education
University of North Dakota

Targeted Audience:

- Undergraduate Students
- Adult Learners interested in pursuing additional education
- Available as a training module through the Office of Workforce Development

Delivery Format & Technology Platform:
Distance Education Course

- Asynchronous
- Self-pace / Self-study Correspondence Format
- Students have up to 9 months to complete course

Technology Platform

- Blackboard, version 6, Level 1
- Smarthinking Online Tutoring

Course Summary:
The course is also unique in its ability to offer interpersonal interaction in an asynchronous environment, while allowing the student to learn at his/her own pace. The course design allows a student to select lesson activities that suits his/her learning style, which also demonstrates an online course that is not solely “text-based.” The course also highlights “full use” of the features offered in web platform, such as Blackboard. The content of the course (interpersonal communication) provides ample opportunity to incorporate a variety of concepts that are adaptable to both academic and employee training/professional development environments.

Obtain Guest Access: Send email to ck_braun@mail.und.nodak.edu