OTS 750/850:
A New Beginning . . .

Course Objective

- To provide professional trainers with the foundation knowledge they should use when working as a team member with software and hardware designers to develop models and simulations that will be used in training.

Course Competencies

- Explain the professional teacher/trainer's role in developing and implementing simulations as an instructional method.
- Explain how simulations can be used to support learning.
- Use the instructional systems development process to insure good training using the simulation method.
- Determine the answers to questions that deal with cost, competencies, and tools required in developing technology-based simulations.
• Outline the potential directions in which technology-driven simulations might take learning in the future.

• Differentiate among design issues:
  - tactical-decision simulations
  - diagnostic simulations
  - crisis-management simulations
  - data-management simulations
  - social-system simulations
  - language skills/communication simulations
  - empathy/insight simulations.

• Explain the relationship between simulation and gaming in learning.

• Outline the planning considerations for post-simulation activities.

Mandatory Course Requirements

• Students must do all of the following.
  - Reading Questions (10%)
  - Reading Log (20%)
  - Simulation Proposal (20%)
  - Final Simulation Project (40%)
  - Simulation Presentation (10%)
Simulations offer some unique opportunities for learning.

- Practicing processes and decisions in a simulation is engaging and helps learners retain information.
- Simulations work well both over the internet and with a global audience.
- Simulations can demonstrate the relevance of other content, motivating participants to learn.
There are a number of reasons why other forms of instruction may complement a simulation.

- Other techniques may be better at teaching straight factual information.
- Some concepts can be better taught by an instructor or shared through peer interaction. (this is true for many soft skills).
- Meeting face-to-face in a conference (especially sales conferences) can be highly motivating.

What is a simulation?

- When a representation of a situation is presented and tasks are required to be performed in that situation.
- It may be realistically represented . . . or abstract.
- Learners behavior is monitored and critiqued
- May be computer driven . . . Or not . . .or partially so.
Visualization of a direct numerical simulation model.

Training Simulation

- Situation should be based on general and specific learning targets or objectives.
- The focus is on learning, not winning.
- The actual learning may not take place until the critique at the end.

Christer Fuglesang in an Underwater EVA Simulation
OTED 750/850, Trends and Issues in Training: Modeling and Simulation

Learning in a Changing World

12 January, 2008

Everything is (Becoming) Digital

- Data is digitized and assessed with computers
- Processes are piloted through Computers
- Communications are mediated through computers

12 January, 2008

The Technological Revolution

- The computer has brought about the integration of:
  - media
  - people
  - communication

Global interconnection = Networked Intelligence
Another dimension

- With new media, content -- text, video, sound, graphics, and data -- takes on new dimension
- People interacting with shared documents

It allows Networked Intelligence

Networked Intelligence

- Adding computer power to the power of old media brings about major change.
- People now move from passive participants to active participants
  - Computer can mimic objects and situations in real life
  - We just haven't utilized the power of the computer very well.

The Future

- While computing power is growing exponentially, it is generally underused.
  - Software is lagging behind the hardware.
  - One solution may be "object-oriented programming"
- The impact of trends will be great for training.
  - Training in new technology
  - Internet possibilities
  - Just-in-time training
Object-Oriented Programming

- Seen as a collection of cooperating objects, as opposed to a traditional view – a program seen as a collection of functions, or simply as a list of instructions to the computer.
- In OOP, each object is capable of receiving messages, processing data, and sending messages to other objects.
  - Each object is an independent little machine with a distinct role or responsibility.

The Changing World of Work

- Distinctions between work, entertainment, learning are increasingly blurred.
- Concepts of work has been shaken – increased competition, shorter product cycles, need for flexibility. All have caused organizational renewal.

The Changing World of Work

- Major shift in what we do at work. Professional and technical workers outnumber industrial workers.
- Employees should no longer expect to remain with one company.
The Changing World of Work

- Employers will have the responsibility for providing their employees with the **time, opportunity, and resources for continuing professional development.**
- Commitment to **lifelong learning** -- ensures skills are there to have a **possibility for success.**

The Learning Organization

- Organizations must provide an **effective learning environment for employees.**
- **Self-development opportunities for all**
  - Workers take responsibility for their own learning and development
- **“Informating”**
  - Use information and technology to **empower many** rather than the **few.**

A Standards Approach to Learning

- Adoption of ISO 9000 standards
- Implementation of **standards of competence** for job performance.
  - Objective, relevant criteria
  - Measurable outcomes
  - Provide internationally recognized certification
- Moving from a **syllabus-based** training to a **competency-based** training
Learning is a Lifelong Responsibility

- Individual's are responsible for learning
- Initial training or qualifications will not suffice in this constantly changing and improving competitive world.
- Continuing professional development is no longer optional.

Continued Professional Development

- Planned and systematic updating of professional KSA
- Ownership of CPD by the individual
- Emphasis on learning through wide range of activities
- Integration of learning and work -- work as a learning experience
- Emphasis on outcomes

Open and Flexible Learning

- World of training has been dominated by “training courses”
- Now we are shifting to structured on-the-job learning often delivered “just in time” when needed.
• Growth in **open/flexible/distance learning**
  - Maximum number of participants
  - Individuals can choose when, where, how, how fast
  - Cost-effective
  - Individuals learn to take responsibility
  - Greater contribution to organizational performance

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**What have we learned?**

- Everything is going digital
- Computers are very powerful
- Data, processes, and communications affected by computers
- and . . .

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**What have we learned?**

- All this affects work as we have known it
- To stay competitive, continued learning will be very important
- We should look at new ways to deliver training
Take a Break!
5 Minutes!

Technology-Based Training: A Solution?

- Must be considered based on:
  - costs
  - benefits
  - effectiveness
  - suitability
Factors in the Choice

- Reducing Cost
  - Large numbers of learners involved
  - Several training locations
  - Trainees travel to central location

- Flexibility
  - Unwillingness to release workers from workplace
  - TBT offers individual starting times
  - Learners starting at different levels
  - Local training support already available

Factors in the Choice

- Content
  - Congruent with the use of technology
  - Stable enough to justify long-time use
  - Highly evolutive, needed continual updating
  - Consistency of delivery to a large group

- Technology
  - Learners already use computers
  - TBT offers unique features

Good TB Training

provides benefits to design and delivery of training

- Increased design quality thorough team approach
- Systematic formative evaluation throughout the design phase
- Training-related standards
- Consistent, high-quality learning experiences
Good TB Training . . . The Benefits

- Learning scenarios not otherwise available
- Safe simulation of high-risk environments
- Use of experts -- widely available
- Trainers freed to become facilitators
- Assessments embedded in modules of training
- Portfolio building -- track competence

How Learners Can Benefit

- Flexible independent study
- Learner controlled progress
- Adaptive, learner controlled organization of learning activities
- Direct student involvement in learning activities
- Systematic practice through simulations
- Immediate feedback of learning
- Privacy -- learning individually
- Enhanced enjoyment and motivation

Computer as a manager of the learning process

- Registering courses and students
- Testing and record keeping
- Directing the student through the course
- Restart facilities
- Course maintenance
- Reporting

Think not only of the macro-management but the micro-management of computer-managed learning.
TBT: Practice and Promise

- Promises empowerment
- Reality -- fails to live up to its promise
  - inappropriate learning model
  - Inappropriate use of technology
- Look at use of multimedia and interactivity
  - Engaging learning . . .

Multimedia

- Has tremendous power to enrich learning
- It can combine media: text, graphics, sound, still and motion pictures
- But does it make for good training -- all the time? Must we have the Bells and Whistles?
- Multimedia must support the learning -- by creating a whole new range of activities.

Interactivity Versus Activity

- A computer cannot be “interactive” -- computers react
- Computers appear to be reactive, via programming.
- Actually, computers are good at “activity”.
- The focus on training should be on good, appropriate activities that help learners learn.
Roles for Trainers/Teachers

- Much speculation . . .
- Emerging forces on training/teaching;
  - shift of responsibility from instructor to learner
  - indispensable role of information technology in learning and training

Instructor’s roles . . .

- More as facilitators than instructors
  - help learners manage their own learning
  - become activity builders
  - creators of new learning environments
- Mastering technology for learning
  - figuring out how BEST to use technology for learning

Next Week

- For Next Week:
  - Do Reading 2 on Learning Activity 2:
    - A Relational Model of Games and Simulations
  - Answer the questions that go with this reading (note link on web site)
• Use your ODU email. That is where I will send information to you.

• I will use this email address:
  • Dnethert@odu.edu

See you next week!