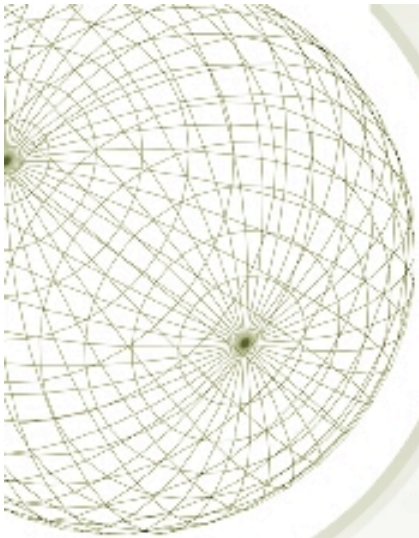

3D Online Learning Environments *improving* online courses and community

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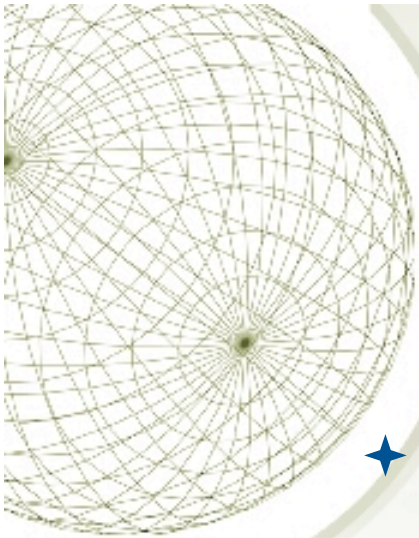
Current State of Post-Secondary e-Learning in US

- Over 90% of US post-secondary institutions offer online courses.
- Primary technology
  - Web (90%), E-mail (80%), Alt (video, phone, etc)
- Admin: Focus is on ROI and Outcomes
- Major Investment at the Institutional Level
  - Vendor Lock-in, Unexpected Cost to Maintain
- Adoption of new technology will be at Program, Dept, and College level…

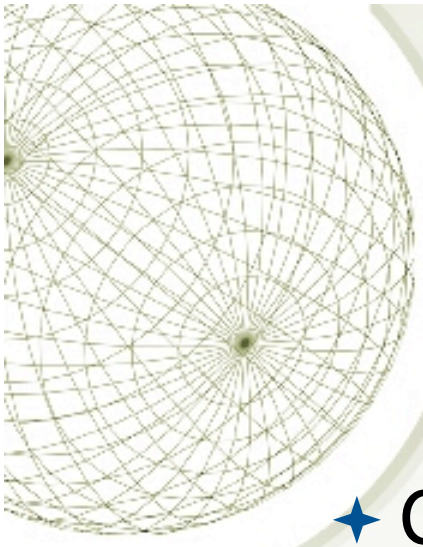


Research Questions

- How can the quality of current online learning be *improved* by 3D environments?
  - Blended, Single Use, Situated Learning, Simulation
- What are the advantages and tradeoffs?
- What level of immersion is required for successful use of 3D environments for learning?
- What is the role and function of Cognitive Scaffolding in immersive environments?
- What elements are required to get students active in an educational environment beyond course interaction?

3D Online Learning Environments at the University of North Texas

- 3D OLE being used in Education Courses since 2002
- What is a 3D OLE ?
  - Context through Immersive Environment
    - Streaming Portal Content
      - Dialup through broadband support
  - VOIP
  - Overheads
  - Chat (says, tells, etc)
  - Other functions as defined/developed



Current Research

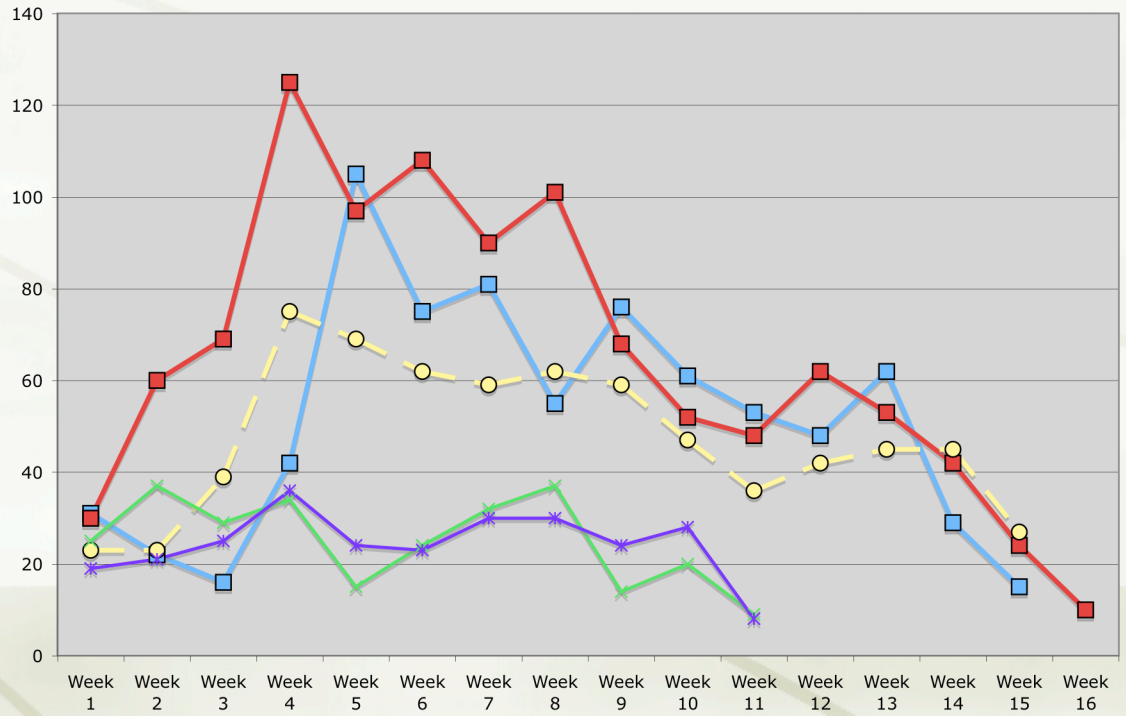
- Comparison between face-to-face, web-based, and 3D OLE for course delivery and variations.
  - Outcomes, Attitudes, Satisfaction (Student and Instructor), Transference
- Impact of higher fidelity feedback mechanisms that are still low-bandwidth in online course systems.
- Scope of 3D environment and its impact.

Outcomes, Attitudes, and Satisfaction

- Face-to-face and 3D Environments are similar
  - Spring 2004, Pre/Post Factor Analysis using the IITTL Instruments (in-press)
  - 12 sections of CECS 4100
- Web and 3D environments
  - 3D shows initial increases in attitudes and satisfaction
- Feedback mechanisms appear to be key for both student and instructor satisfaction

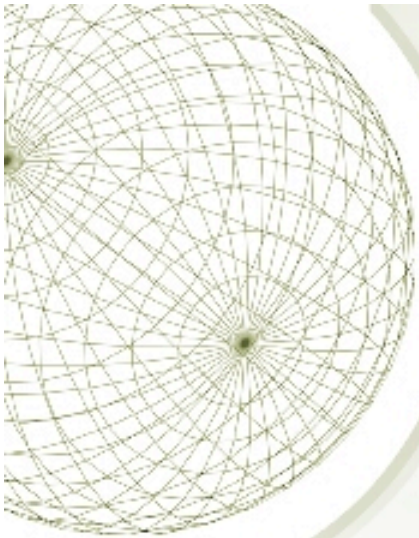
Impact on E-mail based Discourse

- A comparison of similar courses between 2002 and 2004 taught as web, blended, and online.
- The classes using the 3D environments at least every 2 weeks showed increased e-mail discourse
- Discourse Scaffolding?



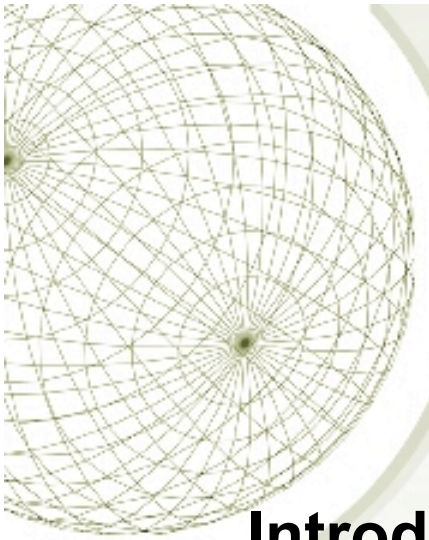
A Few Lessons Learned During Course Deployment

- First time students take up to three sessions to complete exploration and playing with the system and are able to focus on the learning and discussion that is the basis of the current approach.
- Summer Courses are too short to use with inexperienced students.
- No benefit is seen when the system is not used frequently enough.
- The system can be used to provide the intro session successfully
- Younger students “get it” quicker than older students.



Barriers to Access (US) Gone

- Internet Access
- Affordable Computer Performance
- 3D Graphics Adapter



Technology Lag

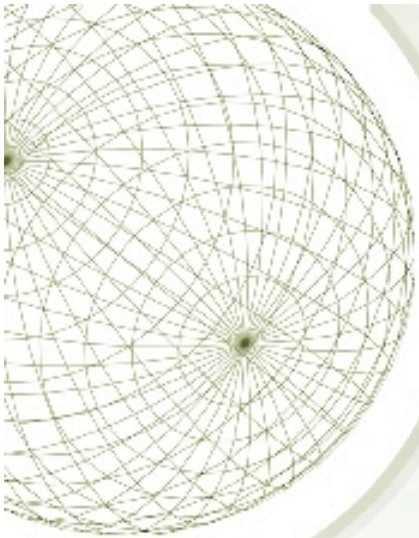
Introduction		Widescale Adoption
1999	→	2003-2004
3D Graphics Acceleration		
≈ 50,000+/- polygons		
2002	→	2006-2007
Pixel and Vertex Shaders		
≈500,000+/- polygon		
2004	→	2007-2009?
Normal Maps		
1+million polygons		

Barriers to Widescale Deployment

- Investment
  - Few Standards and changing standards
  - Content Creation Expensive
  - Content Interoperability and Migration Issues
    - Especially Interaction Content
- Educational Alignment
- Case to be made for ROI to Administration

Conclusion

- Several years away from wide scale use.
- Lots of research to be done to find out how best to use and deploy the technology.
- Initial evidence always looked good (gaming), initial research in the field is beginning to fill in the gaps and is showing positive outcomes to continue to examine the potential of 3D Online Learning Environments.



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