

Education over the Access Grid



Justifications of Instructional Designs
for the Access Grid

Jeff Shuckra & TVN
University of New Mexico
AG Retreat 2003



“Let’s do something ***bold.***”

2000 - Frank Gilfeather, Frank Williams,
Don Morton, Guy Robinson

Traditional Distance Education



Desmond Keegan (Keegan, 1980) identified six key elements of distance education:

- ❑ separation of teacher and learner
 - ❑ influence of **an** educational organization
 - ❑ use of media to link teacher and learner
 - ❑ two way exchange of communication
 - ❑ learners as individuals rather than grouped
 - ❑ educators as an industrialized form

Keyword: “An”

Pro's

- Provides access to school
- Strong sense of self-motivation
- Mentorships

Con's

- Feeling of isolation - not part of the class
- Technical hiccups
- Interaction is low

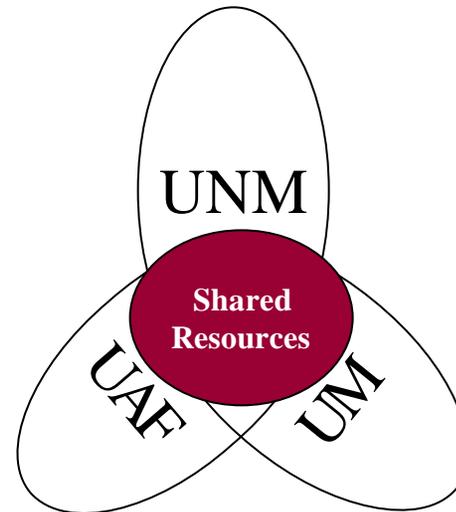


(View from Don Morton's
“Cabin in the Woods” Montana Shack)

Can “education” (per the definition) be provided by 2 or more institutions?



Shared resource concept of the AccessGrid conflicts with the definition of education. Credit must be provided by an institution. In reality, credit will not be granted to students in another institution.



Our Answer...

Cut the crap. Just do it.



AG Funding Models: Suggestion



Current AG Funding:

- Grants
- Internal Overhead
- Charge per use

Suggestion: RAITN

- Commercialize shared resources by selling curriculum.

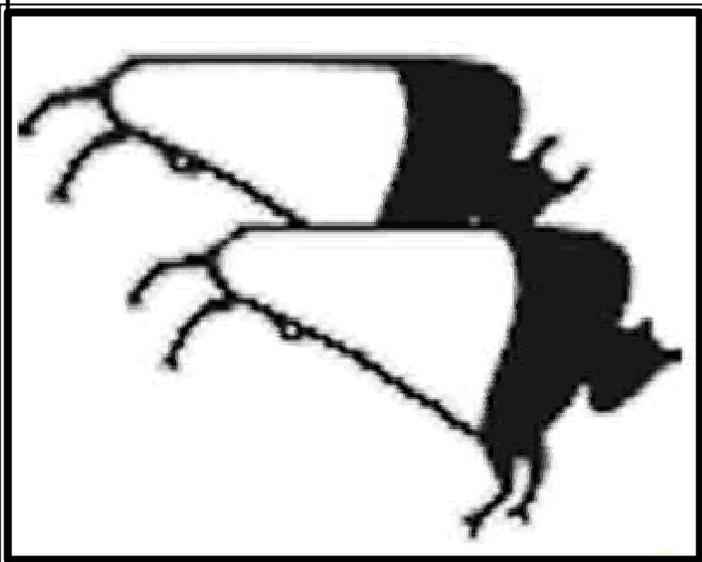


Gary Adamson, CEO

Potential example of selling curriculum



LIF501: Proper techniques for preparing bison
ART502: Framing Artwork



How can the AG's collaborative technologies benefit specifically education?



Simple Answer:

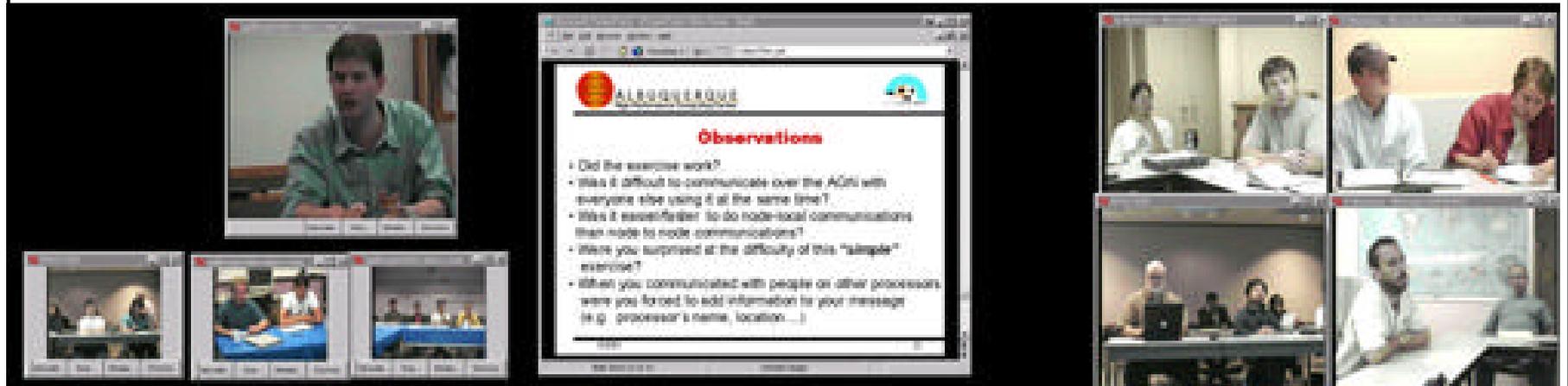
- All sites seen simultaneously
 - 🖥 Improved Social Presence
 - 🖥 Increased Graduation Rates
- Technical side is separated from participants
 - 🖥 Students and instructors focus on content
- Community outreach



187 Miles between ABQ and Dulce, NM

?Donde esta el bandwidth-0?

“Introduction to Parallel Computing”



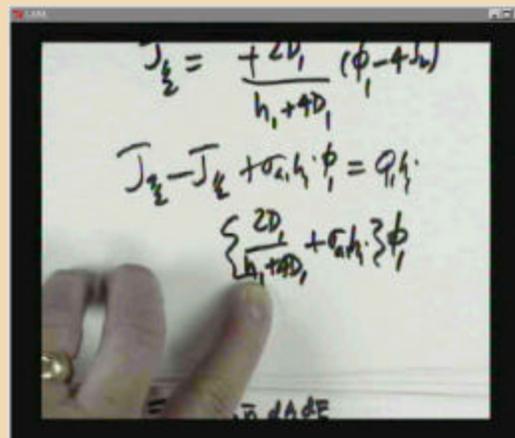
- Instructor is clear and properly framed.
- Local students acknowledge remote students as classmates.

- Clearly visible students, actively engaged

“Old School” Social Presence



CHEM-NUC: Radiation Transport, Spring 2003



•Students are tiny dots

•Difficult reading through h.323

•Professor is hidden

Predictors of student success inside distance education



- Social presence- the feeling that you are a part of the class.
- Student support- education programs that provide technical and emotional guidance maintain their students.
- Deeper interactions- with the content often spark a more holistic comprehension.
- Social integration- the more the student is involved, the more likely the student remains in the program.
- Academic integration- the more the student is academically involved, the more likely the student remains in the program.
- External attribution- the more the student feels separated from campus, the more likely the student will drop the program.

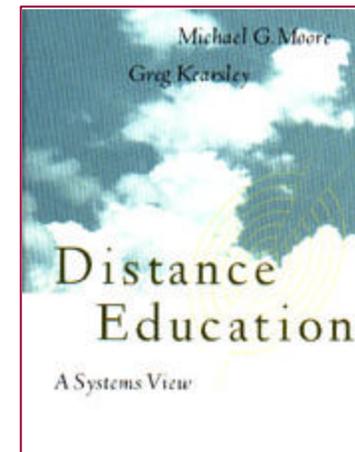


Interactions in Distance Ed

-Moore and Kearsley, 1996



- Teacher - Student
 - 🖥️ Teacher and Student communicate
- Content - Student
 - 🖥️ Student must process the content
- Student - Student
 - 🖥️ Students work with other students
- Participant – Technology (Gunawardena)
 - 🖥️ Participants must be comfortable with tech before focusing on content.



Student - Student Collaborations



Instructional design
determines student-student
collaborations.



Tribal Virtual Network smiles

Role of Culture in AccessGrid

Moore and Kearsley describe student-student interaction as bedrock of any education program. However, different cultures each have a unique view of it. Collectivist societies promote collaboration between students. (Shuckra 2000) Individualist societies promote solutions found independently. (Shuckra 2000) Individualist societies perceive passing notes in class as cheating. Collectivists expect it and build it into the instructional design. This student-student interaction includes social presence, experiences, unique sets of prior knowledge, and a myriad of human factors.

Student-Student Collaborations: TOUCH & TVN



TOUCH Project

Medical students at UNM & UH collaborate on PBL. They must research and present to each other the proper sequential order of assessing a virtual patient. They meet in VR run through the AG.



Tribal Virtual Network

Bridging “Transactional Distance”
Students often want to feel ownership over their learning. They will work remotely, but be more open to collaboration.



How can the AG's collaborative technologies benefit specifically education?



Extended Answer:

- Media v. Instructional Design
 - 🖥️ Media can be packaged so that it is accessible to all sites
 - 🖥️ Instruction may be built to range from rote to fully interactive
- Either way, meetings must be facilitated.
 - 🖥️ Open, persistent spaces only exist on the MOO.

Facilitation -not technology- drives AG conversations.

What happens when the meeting has no direction?



- Total waste of time
- Jokes over the MOO
- Devolves into drunken debates over regional beers
- Shuckra starts to sing



(Access Grid Mayhem)

**Bottomline:
Instructional design RULES the meeting.**

Instructional Rule of Thumbs



Active Training 2'nd Edition, Mel Silberman, 1998

Confusious

What I hear, I forget.

What I see, I remember.

What I do, I understand.

Rule of Active Training

When I **hear**, I forget.

When I **hear** and **see**, I remember a little.

When I **hear**, **see**, and **ask** questions or **discuss** with someone else, I begin to understand.

When I **hear**, **see**, **discuss**, and **do**, I acquire knowledge and skill.

When I **teach** to another, I master

Instructional Designs Must Engage the Learner at Several Levels

Instructional Design Moves the Class



Traditional AG Designs

- Lecture
- Q&A
- Guided note taking
(PPT handouts)

Interactive AG Designs

- Q&A - Dave Ennis
- Facilitated discussions -
SCG
- Team building process of
MPI - Tim Warburton

Moore's Transactional Distance



The interplay between people who are teachers and learners, in environments that have the special characteristic of being separate from one another, and a consequent set of special teaching and learning behaviors" (Moore and Kearsley, p. 200).

The **physical distance** inherent in distance education "leads to communication gaps, a psychological space of potential misunderstandings between the behaviors of instructors and those of the learners" (Moore and Kearsley, p. 200).

The extent and nature of dialog is determined by:

- the educational philosophy of the individual or group responsible for the design of the course,
- the personalities of teacher and learner,
- the subject matter of the course, and
- the environmental factors.

(Moore and Kearsley, p. 201)

Bottomline: Both Technological and Human Barriers exist in Distance Ed.

Saloman's Theory of Amount of Invested Mental Effort



He suggests that students must believe that they can learn from a medium before they will begin processing content.

Adults will tune out content that comes from a medium that they do not trust. For example, technically illiterate students take time to learn from computers. However, these students often do better than their “techie” counterparts once their fear and intimidation is overcome.

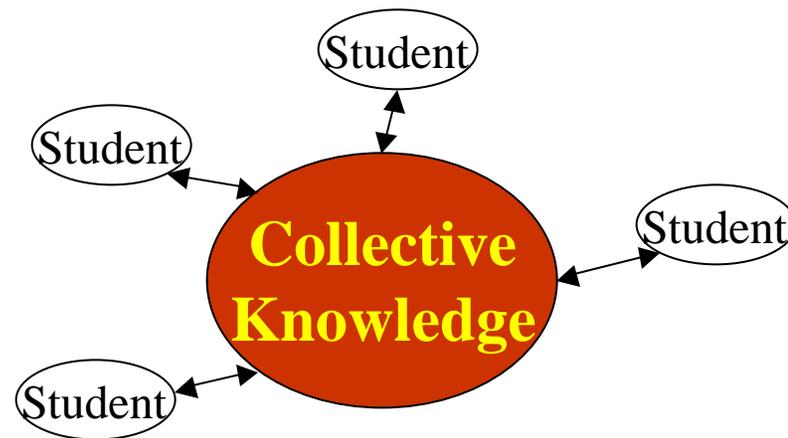
Bottomline: Engage the student

Team Approach = Social Constructivism



The AccessGrid's ability to see all sites simultaneously is a perfect opportunity for ***Social Constructivism***.

- 🖥️ Groups of students forming a collective interpretation of knowledge
- 🖥️ Example: Scientific Workgroups



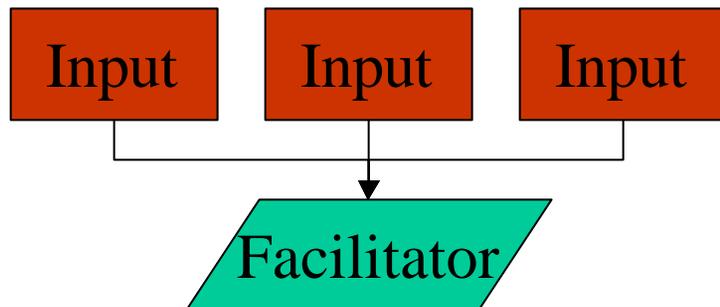
The Major Limitation (IMHO) in v1.0



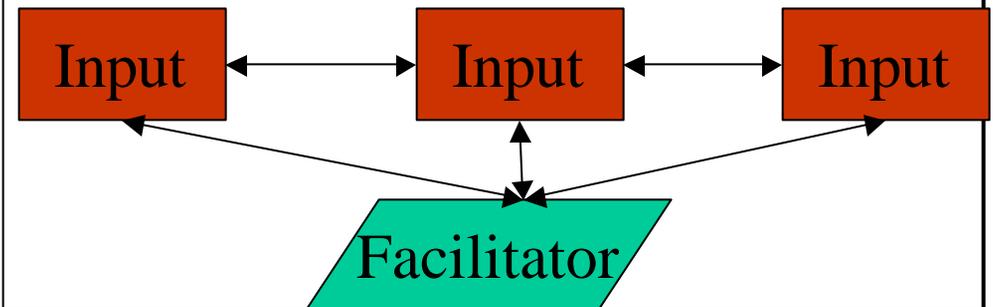
Only one site may speak at a time in v1.0

- 🖥️ No room for offline conversations
- 🖥️ No note passing
- 🖥️ No body language between offline participants
- 🖥️ *Everything must be discussed as a group*

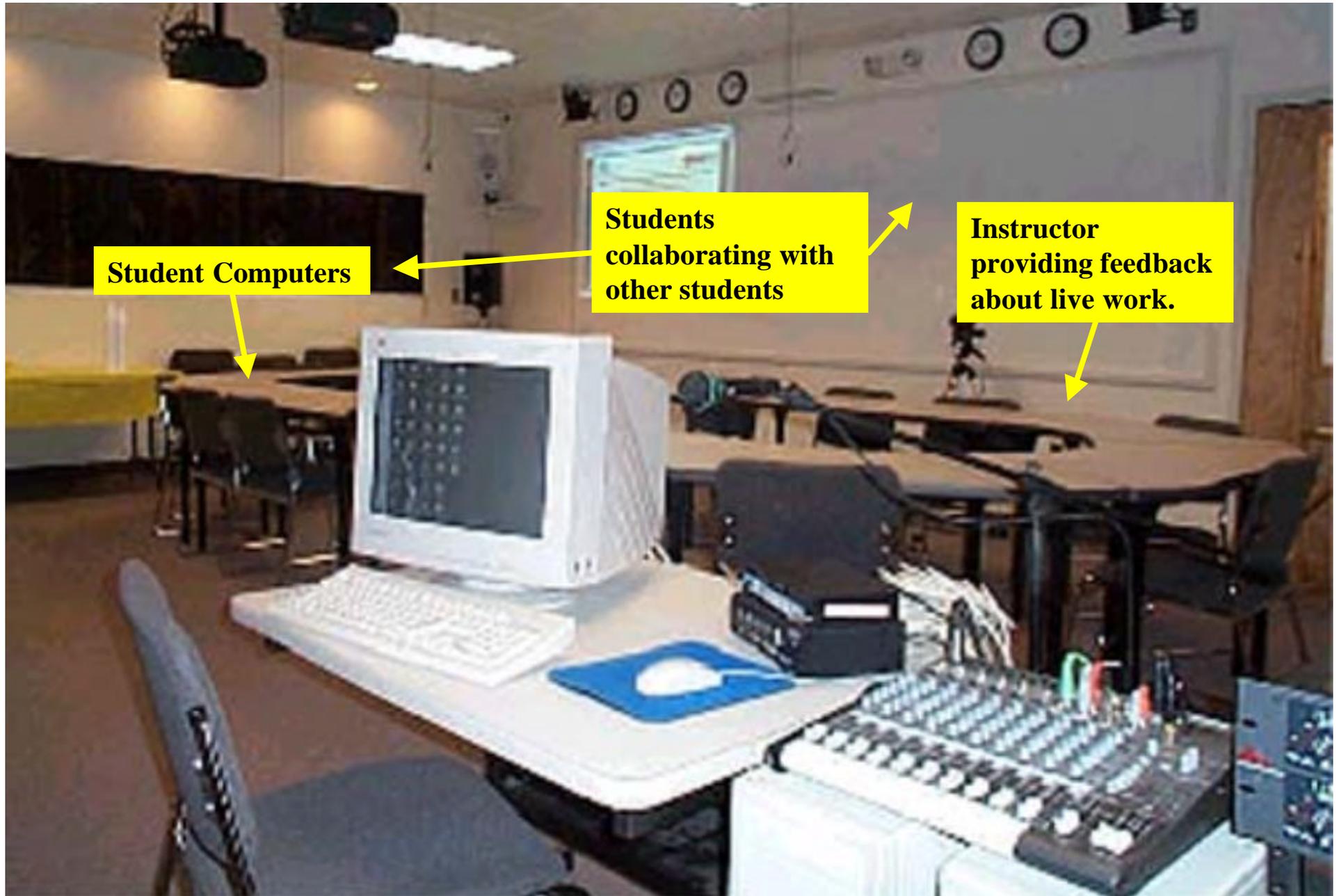
AG: One Voice at a Time



Free-flowing Discussion



What else is needed for experiential learning?



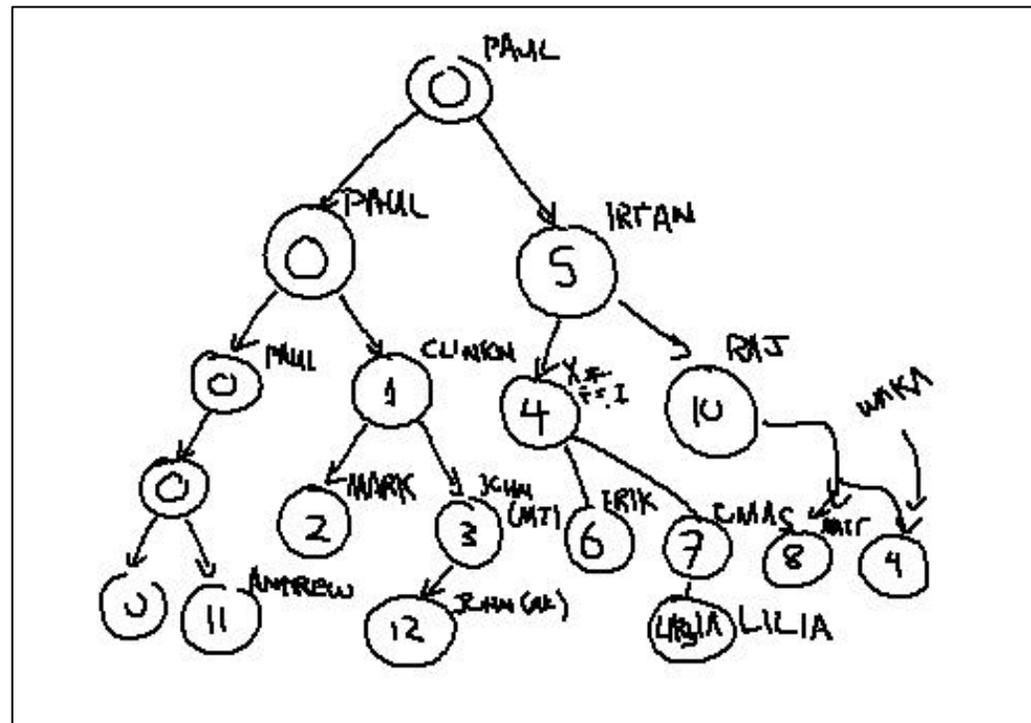
Student Computers

Students collaborating with other students

Instructor providing feedback about live work.

Demonstrations: Use VNC to model

MPI and Interactions over the AG



Alternatives to Lecturing



Students Present Case Studies

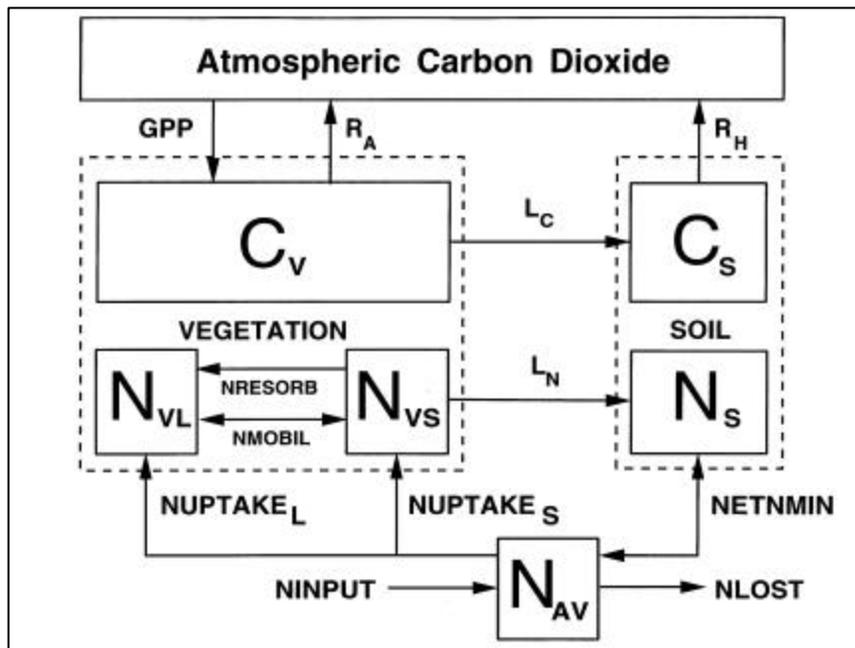
- engage mental effort and student-student interactions across distances

Students presented their debugging technique with VAMPIR.



Information Search

 learners must go to terminals and research answers



A Comparison of VAMPIR Outputs
for the
Terrestrial Ecosystem Model
Running on a
Cray T3E and a Linux Cluster

Alternatives to Lecturing



Study Groups

- 🖥️ use “persistent space” and offer offline opportunities for students to gather

Jack Shuckra
2.5 days old

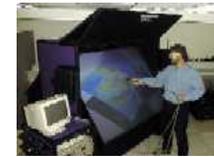


Alternatives to Lecturing



Play Games: “Concentration” “Simon Says”

 learners should be given a strategy for focusing attention and allowed to produce that strategy



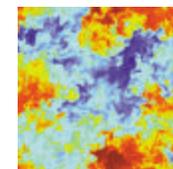
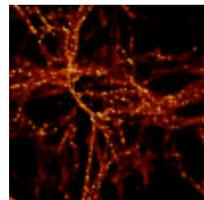
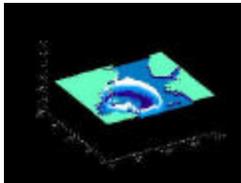
Compute



Store



Visualize



Alternatives to Lecturing

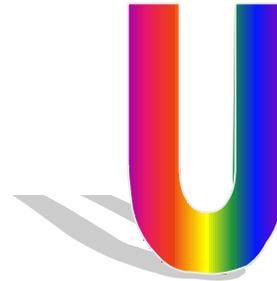
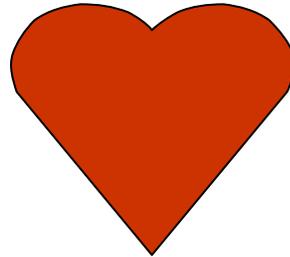


Jigsaw Learning:

- each site is a group, they research answers to different questions, then report to the other groups



Assembling AG Courses



- Recognize and work within AG world
 - Pre-assessment
 - Set learning objectives
 - Build content
- Convert into appropriate instructional design
 - Deliver, Provide feedback, Conclude
 - Evaluation

Pre-Assessment



- What are their educational needs?
 - 🖥️ What are your expectations?
 - 🖥️ Based on course descriptions, how will this help you?
 - 🖥️ What additional objectives would you like to cover?
- Knowledge, skills, and attitudes of participants?
- Conditions that will affect participant involvement?

Setting Learning Objectives



Base on:

- 🖥️ task analysis
- 🖥️ percent of time learners spend on the task
- 🖥️ how critical the task is
- 🖥️ frequency of performing task
- 🖥️ complexity of the task

Assemble Content

Use task analysis as a guide to content development.



Concluding AG Training



- Leave plenty of time at end of program for reviewing content.
- Invite lingering questions and concerns
- Engage in self-assessment of what they learned
- Focus the group on back-on-the-job applications
- Provide opportunity for participants to express their sentiments toward each other

Evaluating Education



- Post-session reaction surveys
- Anonymous remarks
- Oral survey
- Informal interview
- Advisory group

Discussion

In Summary...



- Facilitation leads learners
- Instructional designs must engage the learner at several levels
- Experiment with instruction beyond a mere “content dump.”
- Take advantage of shared resources.



Jack Shuckra
9 Months
February, 2003

