Pursuing an Academic Career
Virtual Event Series

Interactive Teaching
January 21, 2011

Audio access: Call in 1-800-704-9804

Access code: expired

Please **mute your phone** by pressing *6

Alternate number: 1-404-920-6604 (**not** toll-free)

Technical problems? Contact Monica at mbruckne@carleton.edu

Program begins at:

3 pm Eastern | 2 pm Central | 1 pm Mountain | 12 pm Pacific

You can find information about the event at

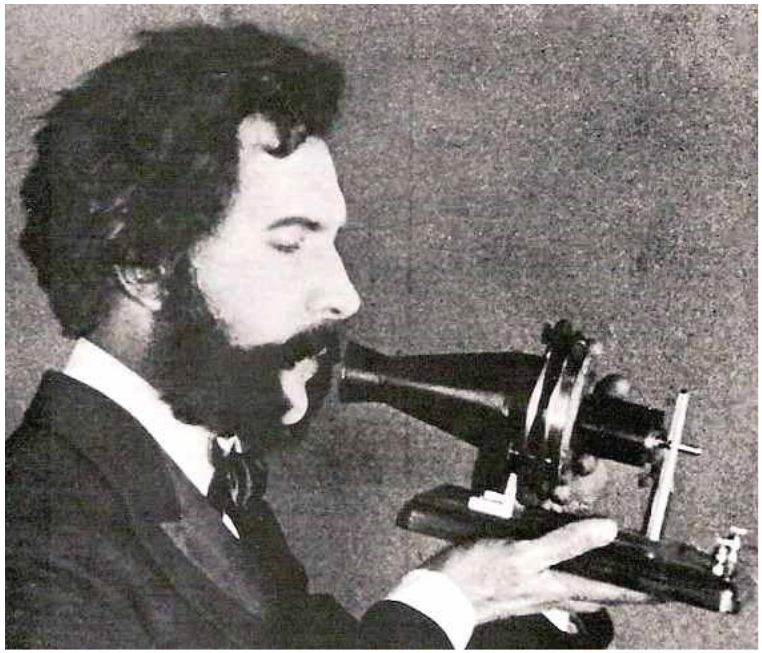
http://serc.carleton.edu/NAGTWorkshops/careerdev/AcademicCareer2011/jan_2011.html

On the Cutting Edge

Professional Development for Geoscience Faculty 2010-11

Join in on the phone

- Press *6 to mute your phone line
- Press *6 to un-mute
- Please mute your line during presentations.
- Un-mute during open discussions.



On the Cutting Edge

Professional Development for Geoscience Faculty 2010-11

Interactive Teaching

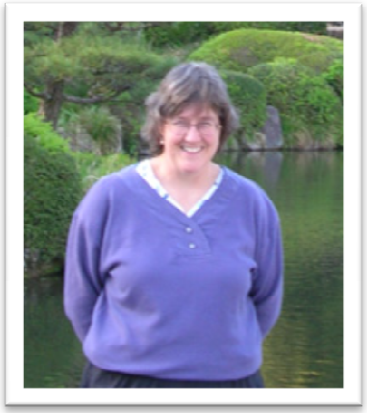
Pursuing an Academic Career
Virtual Event Series

Rachel Beane

Bowdoin College

Heather Macdonald

College of William and Mary



Monica Bruckner

Science Education Resource Center (SERC)

On the Cutting Edge
Professional Development for Geoscience Faculty 2010-11

Overview

- Introduction to Elluminate and Icebreaker
- *Interactive Teaching* structured session (with questions)
- Open questions and selected resources
- Evaluation of event

On the Cutting Edge

Professional Development for Geoscience Faculty 2010-11

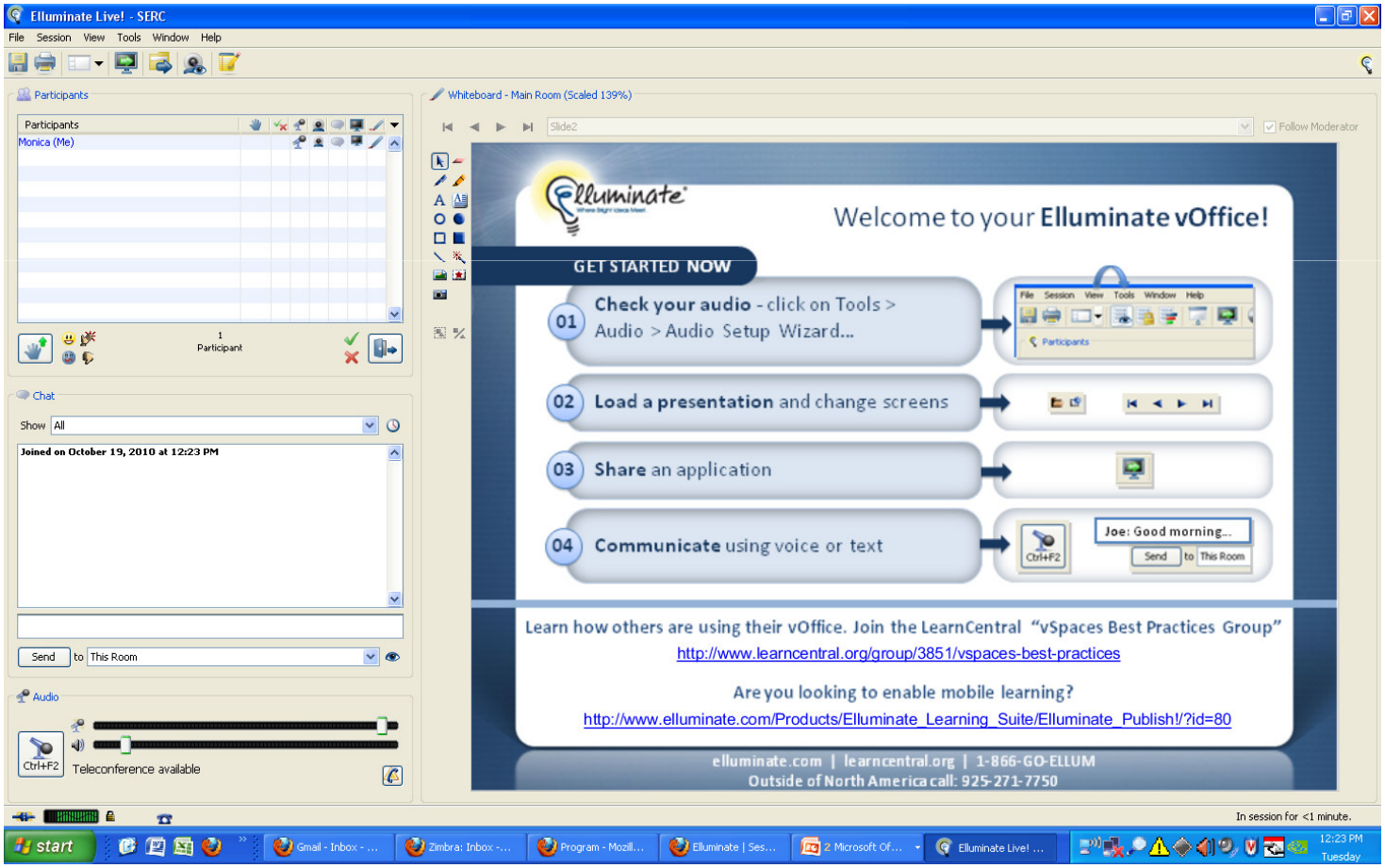
Introduction to Elluminate and Icebreaker

On the Cutting Edge

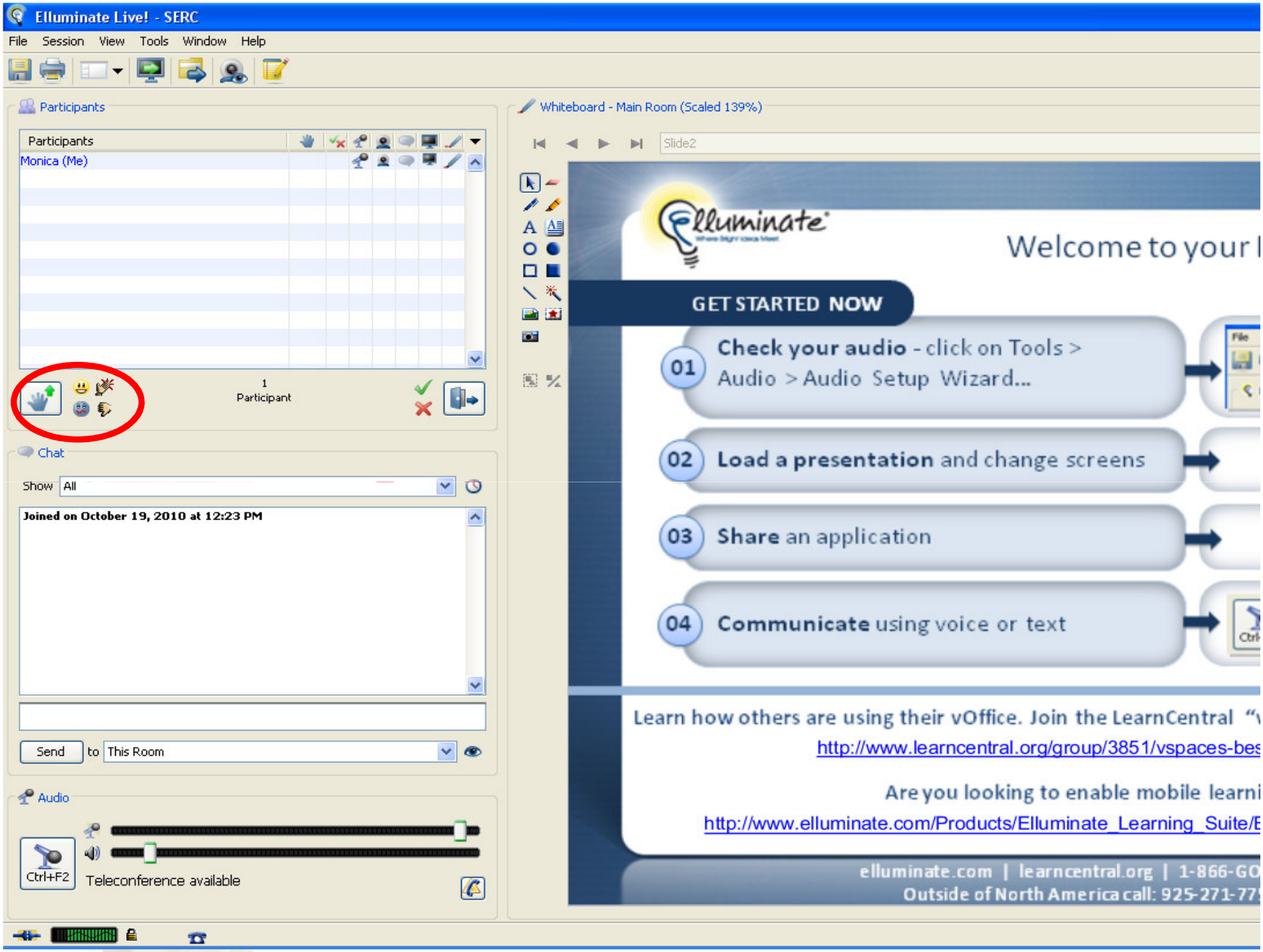
Professional Development for Geoscience Faculty 2010-11

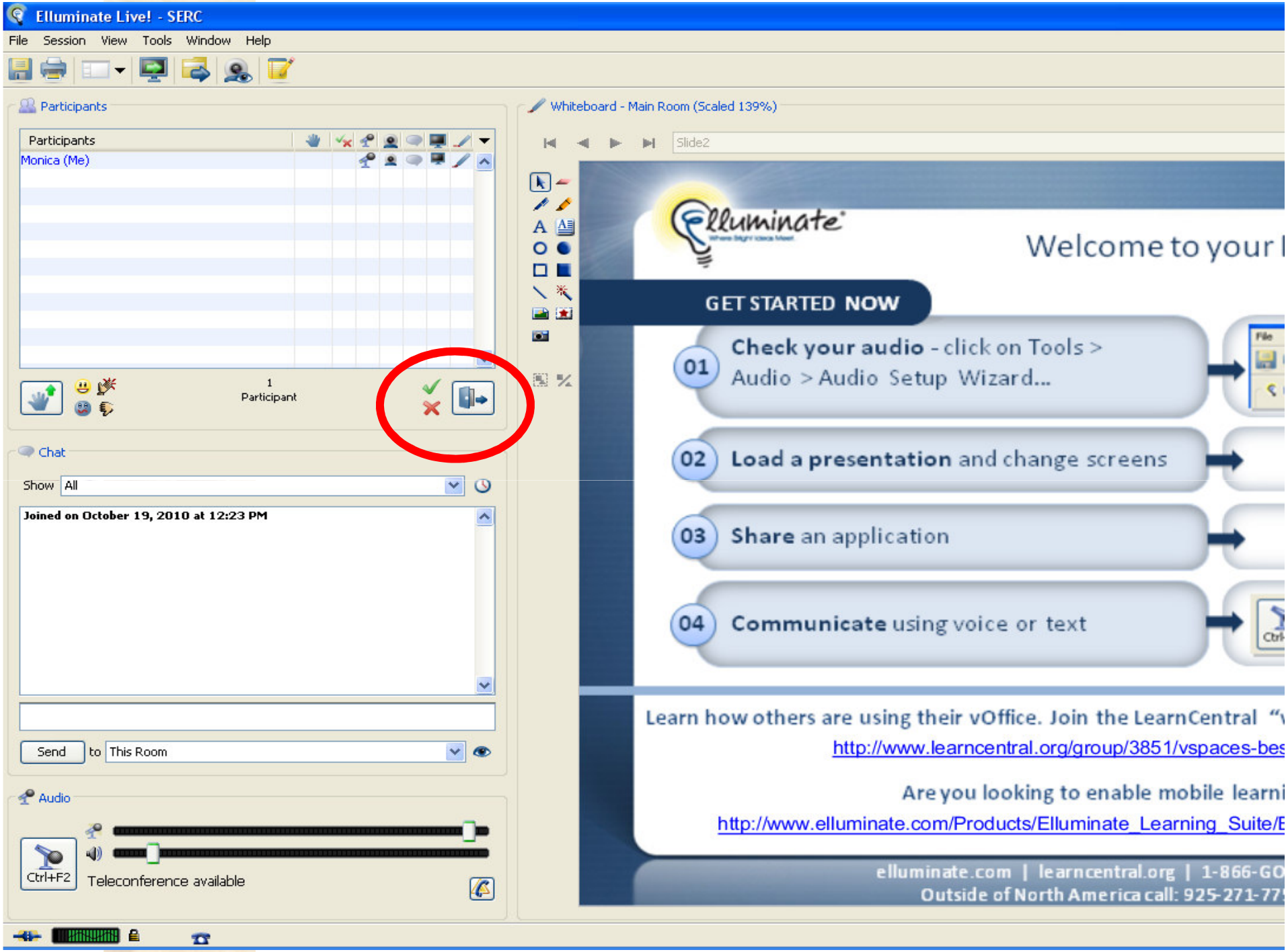
Getting Started with Elluminate

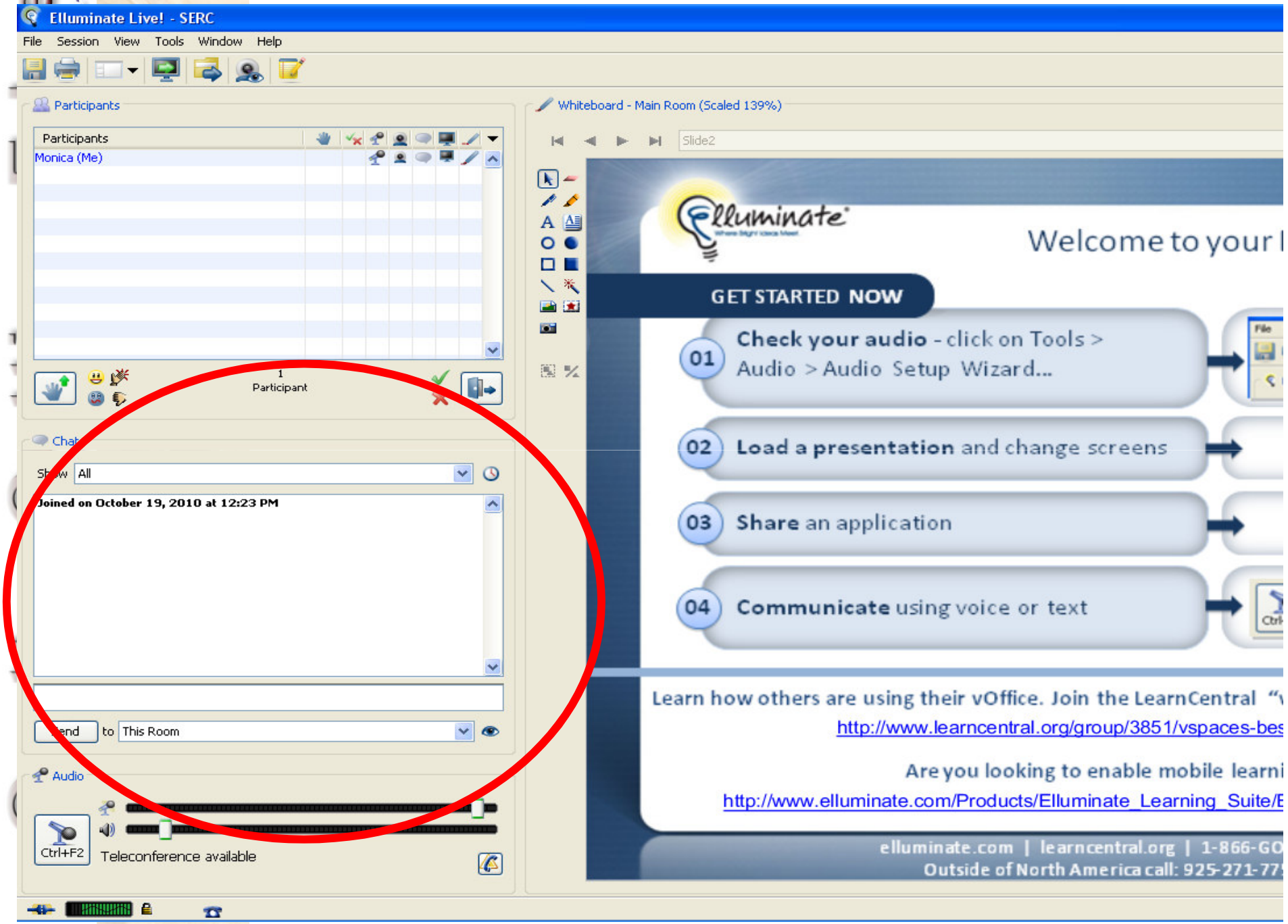
Hi! I'm Monica.

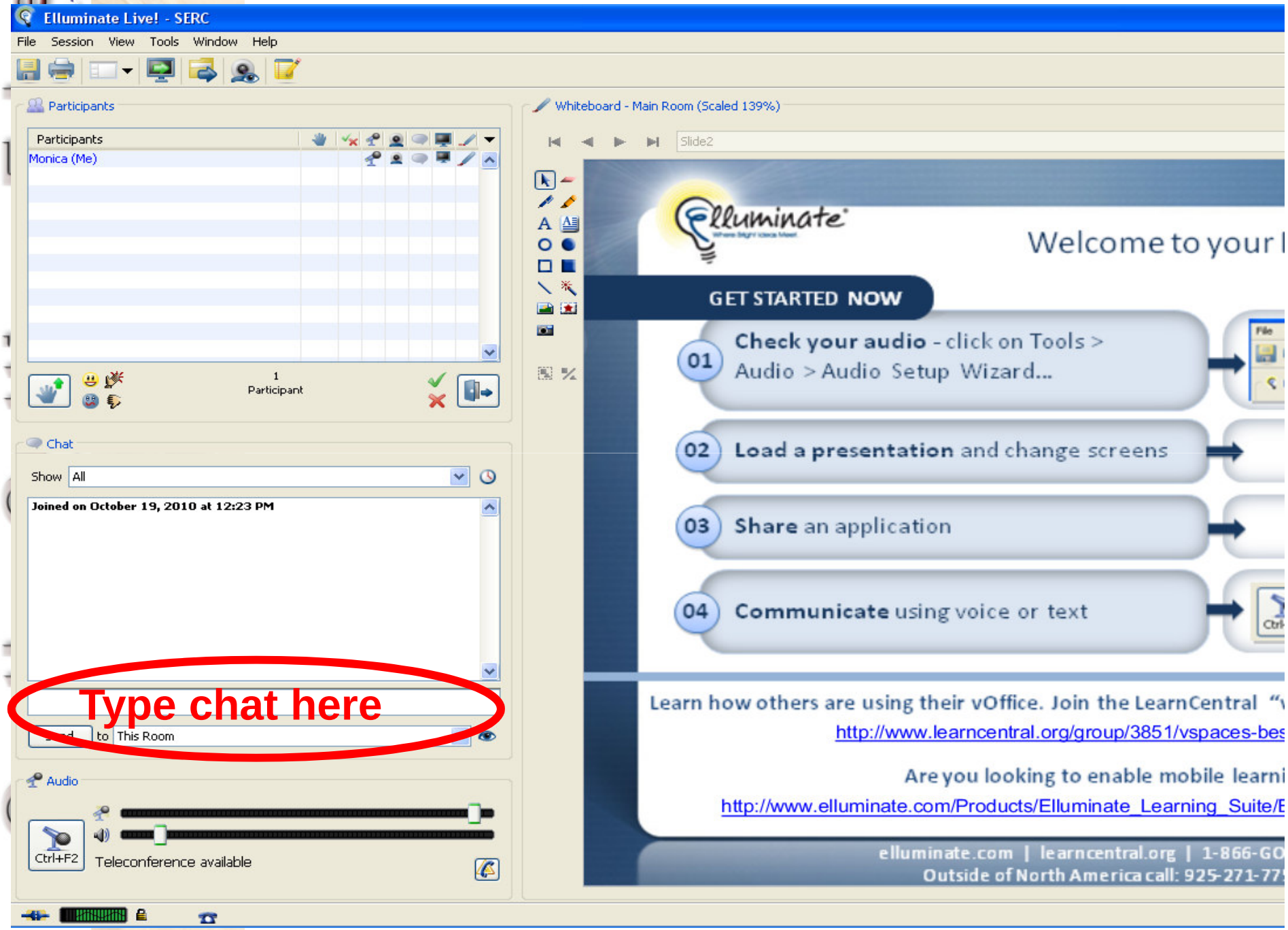


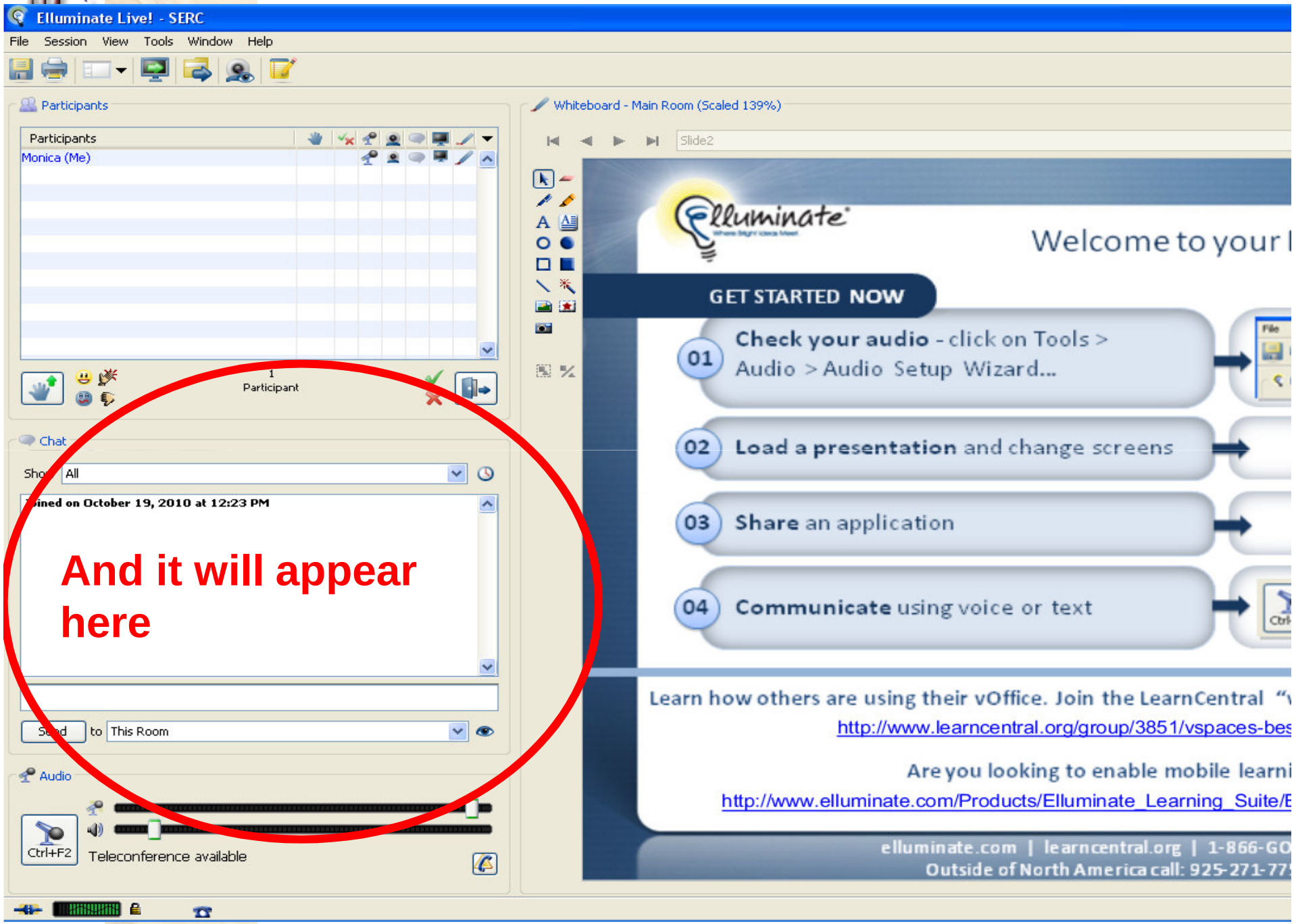
Presentation modified from Karin Kirk (thanks Karin!)

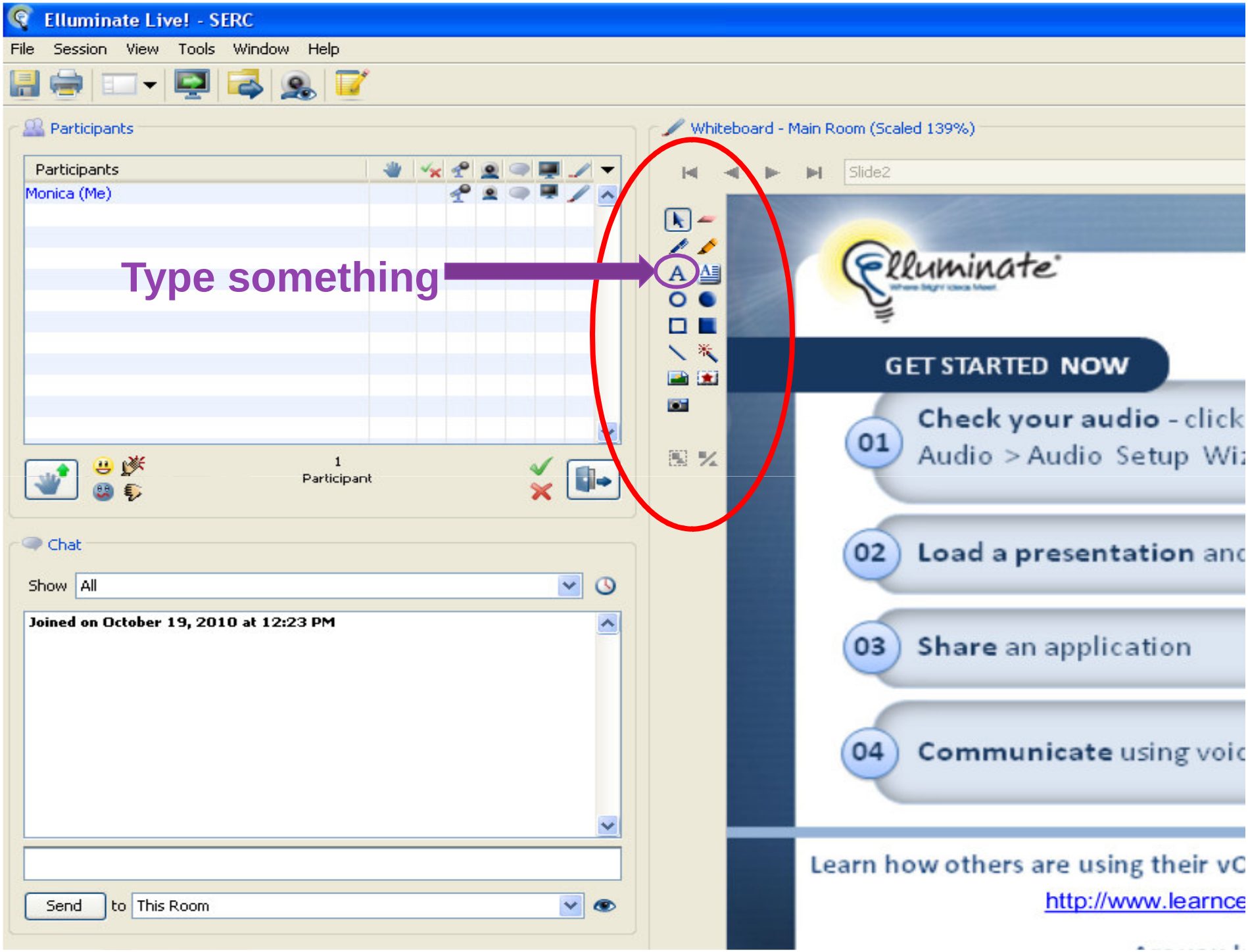

Elluminate Live! - SERC
File Session View Tools Window Help
Participants
Participants
Monica (Me)
1
Participant
Chat
Show All
Joined on October 19, 2010 at 12:23 PM
Send to This Room
Audio
Ctrl+F2
Teleconference available
Whiteboard - Main Room (Scaled 139%)
Slide2
Elluminate
Welcome to your
GET STARTED NOW
01 Check your audio - click on Tools > Audio > Audio Setup Wizard...
02 Load a presentation and change screens
03 Share an application
04 Communicate using voice or text
Learn how others are using their vOffice. Join the LearnCentral "
http://www.learncentral.org/group/3851/vspaces-bes
Are you looking to enable mobile learni
http://www.elluminate.com/Products/Elluminate_Learning_Suite/E
elluminate.com | learncentral.org | 1-866-GO
Outside of North America call: 925-271-77


Elluminate Live! - SERC
File Session View Tools Window Help
Participants
Participants
Monica (Me)
1
Participant
Chat
Show All
Joined on October 19, 2010 at 12:23 PM
Send to This Room
Audio
Ctrl+F2
Teleconference available
Whiteboard - Main Room (Scaled 139%)
Slide2
Elluminate
Welcome to your
GET STARTED NOW
01 Check your audio - click on Tools > Audio > Audio Setup Wizard...
02 Load a presentation and change screens
03 Share an application
04 Communicate using voice or text
Learn how others are using their vOffice. Join the LearnCentral "
http://www.learncentral.org/group/3851/vspaces-bes
Are you looking to enable mobile learni
http://www.elluminate.com/Products/Elluminate_Learning_Suite/E
elluminate.com | learncentral.org | 1-866-GO
Outside of North America call: 925-271-77


Elluminate Live! - SERC
File Session View Tools Window Help
Participants
Participants
Monica (Me)
1
Participant
Chat
Show All
Joined on October 19, 2010 at 12:23 PM
Send to This Room
Audio
Ctrl+F2
Teleconference available
Whiteboard - Main Room (Scaled 139%)
Slide2
Elluminate
Welcome to your
GET STARTED NOW
01 Check your audio - click on Tools > Audio > Audio Setup Wizard...
02 Load a presentation and change screens
03 Share an application
04 Communicate using voice or text
Learn how others are using their vOffice. Join the LearnCentral "
http://www.learncentral.org/group/3851/vspaces-bes
Are you looking to enable mobile learni
http://www.elluminate.com/Products/Elluminate_Learning_Suite/
elluminate.com | learncentral.org | 1-866-GO
Outside of North America call: 925-271-77


Elluminate Live! - SERC
File Session View Tools Window Help
Participants
Participants
Monica (Me)
1
Participant
Chat
Show All
Joined on October 19, 2010 at 12:23 PM
Type chat here
to This Room
Audio
Ctrl+F2
Teleconference available
Whiteboard - Main Room (Scaled 139%)
Slide2
Elluminate
Welcome to your
GET STARTED NOW
01 Check your audio - click on Tools > Audio > Audio Setup Wizard...
02 Load a presentation and change screens
03 Share an application
04 Communicate using voice or text
Learn how others are using their vOffice. Join the LearnCentral "
http://www.learncentral.org/group/3851/vspaces-bes
Are you looking to enable mobile learni
http://www.elluminate.com/Products/Elluminate_Learning_Suite/E
elluminate.com | learncentral.org | 1-866-GO
Outside of North America call: 925-271-77


Elluminate Live! - SERC
File Session View Tools Window Help
Participants
Participants
Monica (Me)
1
Participant
Chat
All
Joined on October 19, 2010 at 12:23 PM
And it will appear here
to This Room
Audio
Ctrl+F2
Teleconference available
Whiteboard - Main Room (Scaled 139%)
Slide2
Elluminate
Welcome to your
GET STARTED NOW
01 Check your audio - click on Tools > Audio > Audio Setup Wizard...
02 Load a presentation and change screens
03 Share an application
04 Communicate using voice or text
Learn how others are using their vOffice. Join the LearnCentral
http://www.learncentral.org/group/3851/vspaces-bes
Are you looking to enable mobile learni
http://www.elluminate.com/Products/Elluminate_Learning_Suite/
elluminate.com | learncentral.org | 1-866-GO
Outside of North America call: 925-271-77


Elluminate Live! - SERC
File Session View Tools Window Help
Participants
Participants
Monica (Me)
Type something
1
Participant
Chat
Show All
Joined on October 19, 2010 at 12:23 PM
Send to This Room
Whiteboard - Main Room (Scaled 139%)
Slide2
Elluminate
GET STARTED NOW
01 Check your audio - click
Audio > Audio Setup Wiz
02 Load a presentation and
03 Share an application
04 Communicate using voic
Learn how others are using their vC
http://www.learnce

On the Cutting Edge
Professional Development for Geoscience Faculty 2010-11

Question 1

Have you attended a *Cutting Edge* workshop?

Answer yes or no using poll function

green checkmark = yes

red X = no

On the Cutting Edge
Professional Development for Geoscience Faculty 2010-11

Question 2

This spring, what are your teaching responsibilities?

A. Teaching a lab (TA or faculty)
B. Teaching a lecture-based course
C. Teaching both lecture and lab
D. I'm not teaching this spring

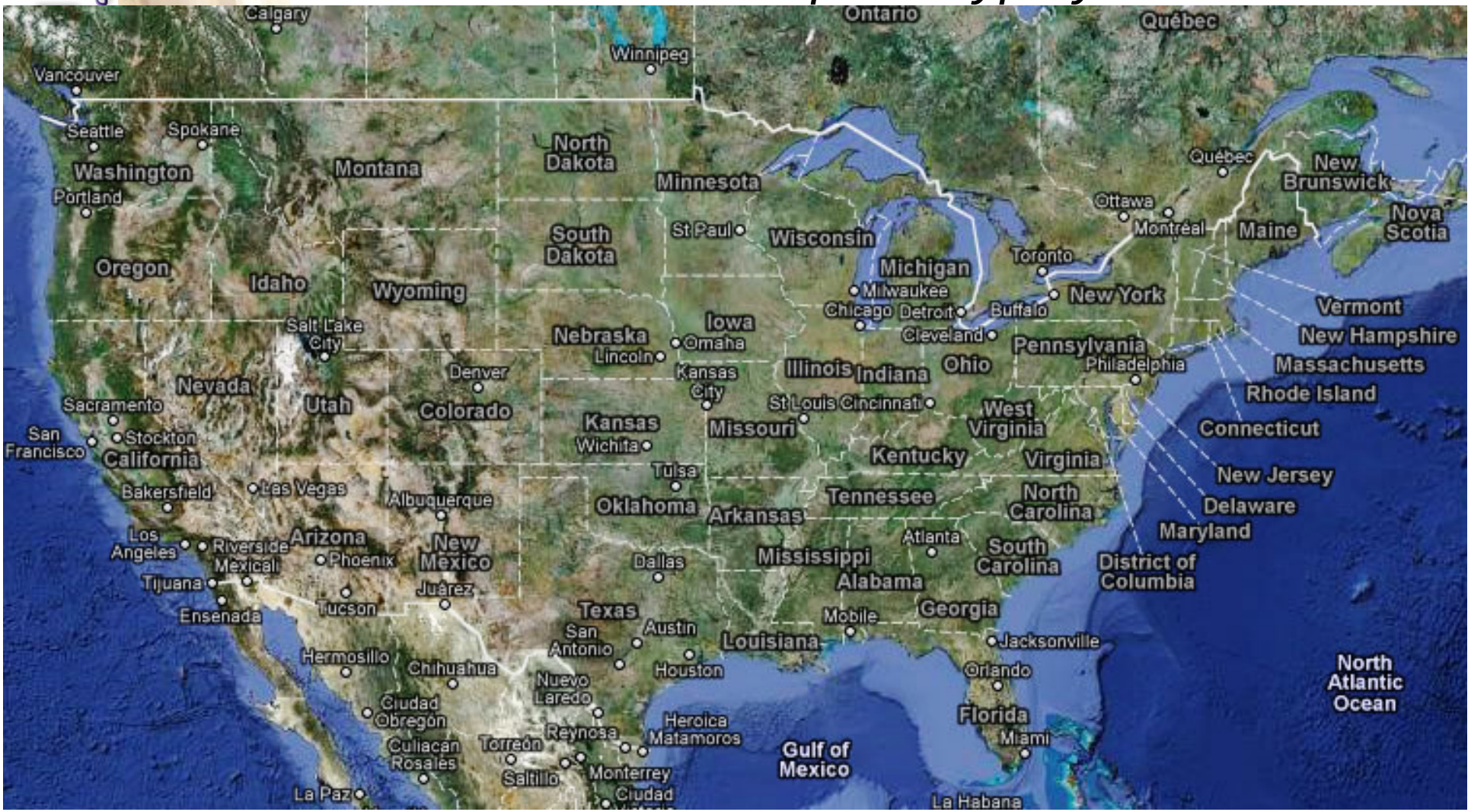
Click A, B, C, or D to record your answer

Edge
Science Faculty 2010-11

Question 3

Where are you?

Click on the US map and type your name



On the Cutting Edge
Professional Development for Geoscience Faculty 2010-11

Question 4

What is one thing that you want to learn from today's session?

Answer by typing into text box

On the Cutting Edge

Professional Development for Geoscience Faculty 2010-11

Today's Goals

- Learn about **Think-Pair-Share**, **Concept Map**, **Gallery Walk**, and **Jigsaw** strategies and examples.
- Gain ideas for using these types of activities in your teaching.
- Learn about the advantages of using interactive teaching activities to improve student learning.

Think-Pair-Share

Think-Pair-Share Examples

- Describing and interpreting images (e.g., outcrops)
- Answering questions about figures (e.g., patterns, trends, rates, various calculations)
- Solving problems

Executing think-pair-share exercises

Based on the short video of one example of TPS in action or your own experience, what are strategies for the successful **implementation** of TPS?

If you'd like, please share your response by typing into text box.

http://serc.carleton.edu/NAGTWorkshops/earlycareer/teaching/toolkit.html

Think-Pair-Share

- Simple way to engage students
- Provides time for everyone to develop answers, and more students can be right
- Can clarify incorrect answers or misconceptions
- Exercise may fall flat
- Doesn’t take much prep time

On the Cutting Edge
Professional Development for Geoscience Faculty 2010-11

Think-Pair-Share

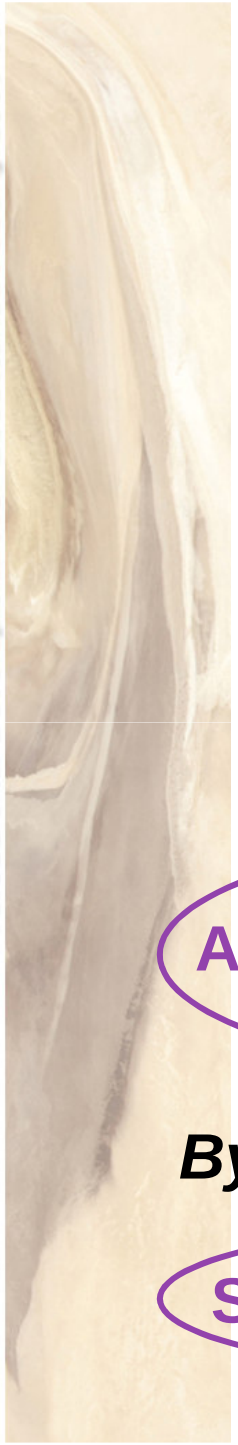
- Take a minute to THINK about how <u>you</u> might use Think-Pair-Share in a class or lab.

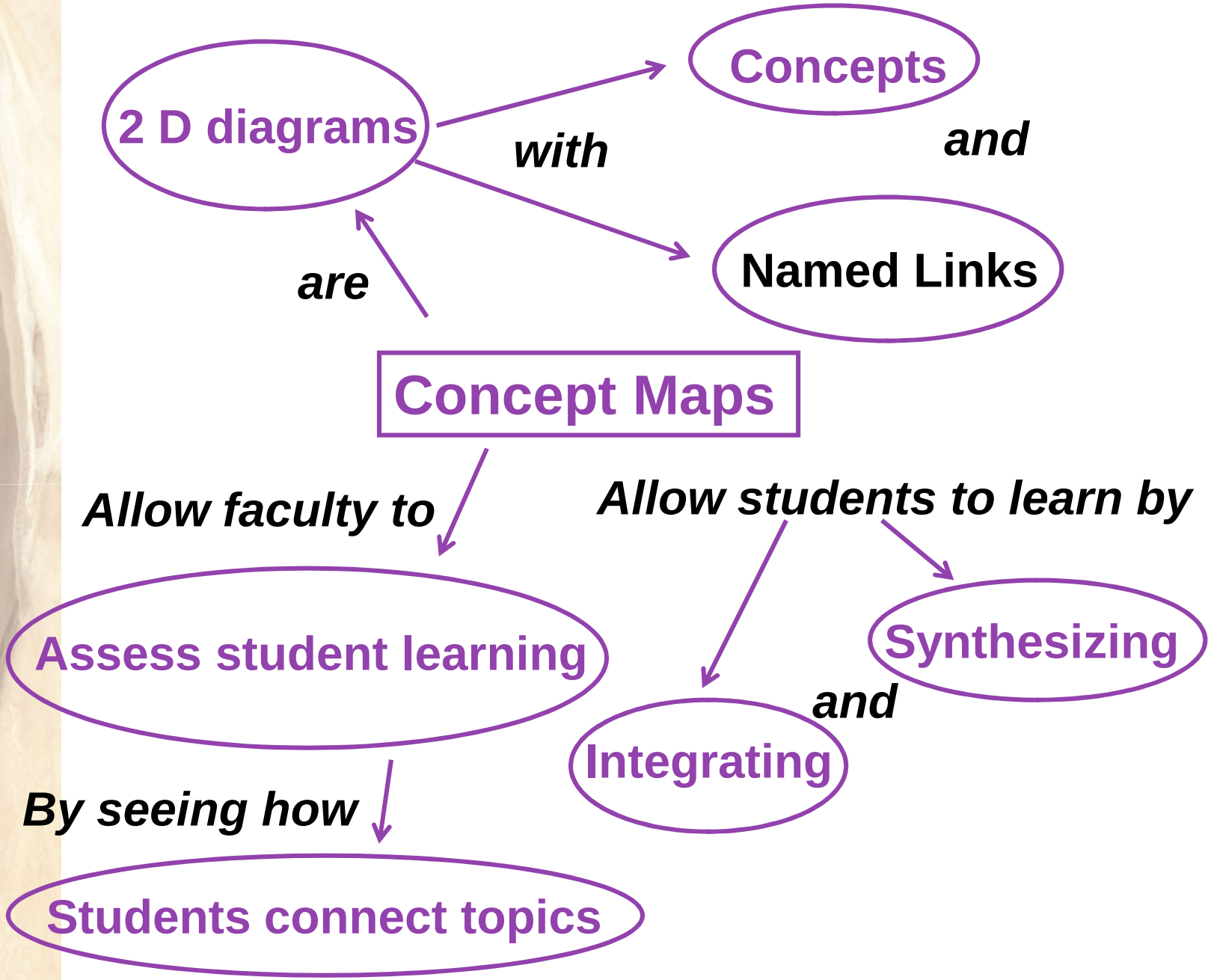
Share your idea Questions?

- *If you'd like to,* share your example by typing into text box.
- Take a moment to read through the other responses, and gain new ideas.
- If you have a question about Think-Pair Share, please ask now.
- (If you have questions along the way, feel free to write them in the text box at any time.)

On the Cutting Edge

Professional Development for Geoscience Faculty 2010-11





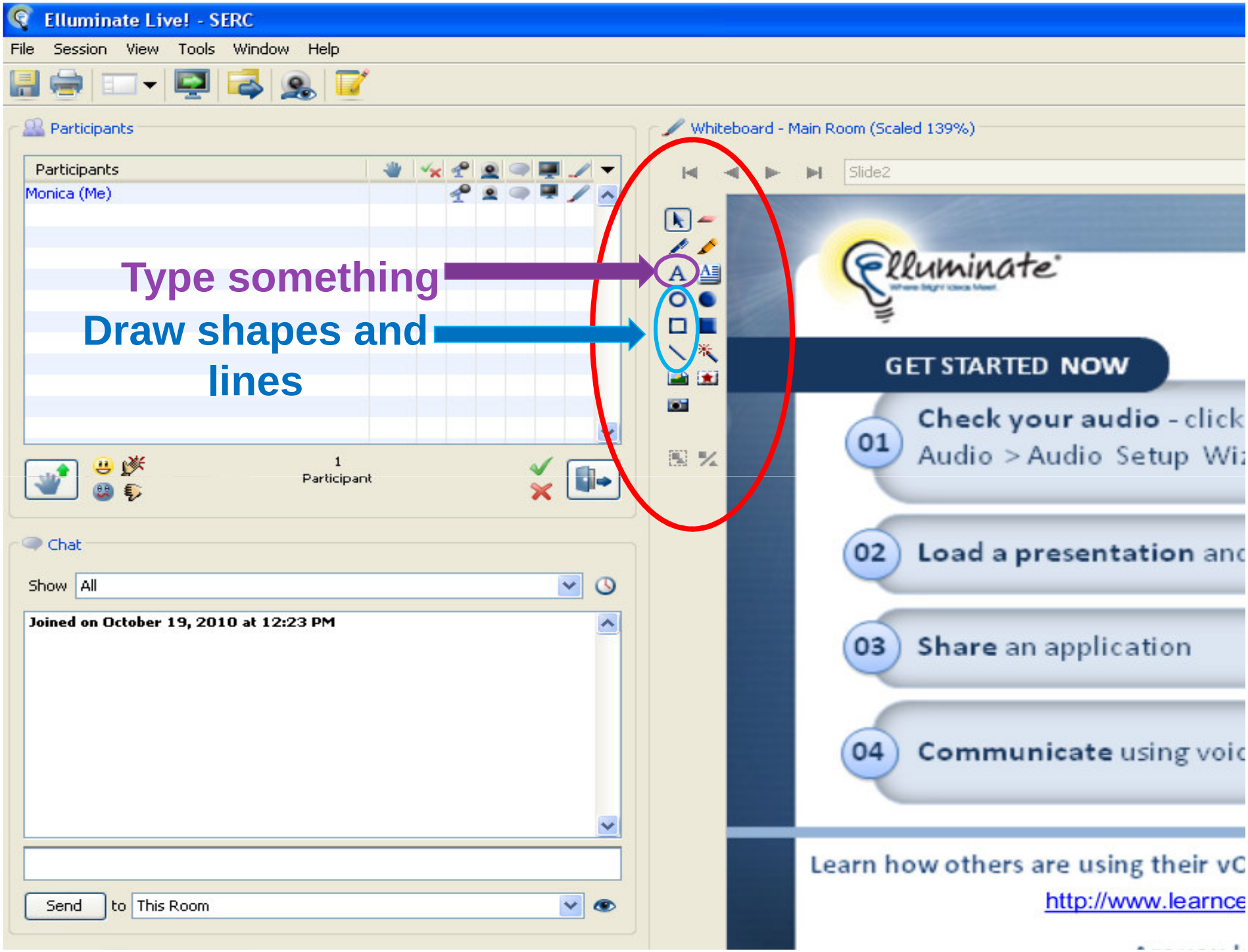
Concept Maps

Angelo and Cross (1993) indicate that concept maps help develop student abilities.

- The ability to **draw reasonable inferences** from observations.
- The ability to **synthesize and integrate** information and ideas.
- The ability to **learn concepts** and theories in the subject area.

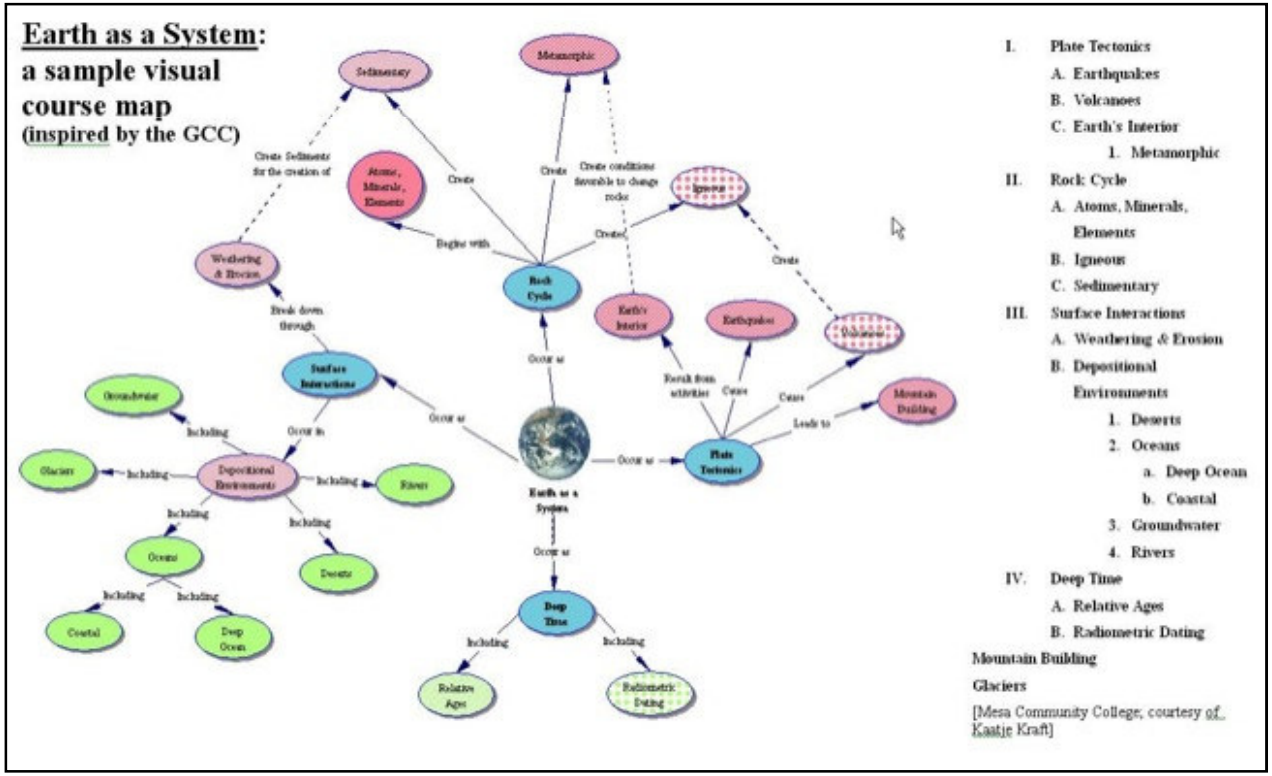
On the Cutting Edge

Professional Development for Geoscience Faculty 2010-11


Elluminate Live! - SERC
File Session View Tools Window Help
Participants
Participants
Monica (Me)
Type something
Draw shapes and lines
1
Participant
Chat
Show All
Joined on October 19, 2010 at 12:23 PM
Send to This Room
Whiteboard - Main Room (Scaled 139%)
Slide2
Elluminate
GET STARTED NOW
01 Check your audio - click
Audio > Audio Setup Wiz
02 Load a presentation and
03 Share an application
04 Communicate using voic
Learn how others are using their vC
http://www.learnce

Concept Maps

- THINK about how you might apply Concept Maps.



Concept Maps

- *If you'd like to*, share your example by typing into text box.
- Please take a moment to read through the other responses.
- If you have a question about Concept Maps, please ask now.

Value of Interactive Teaching

- Improves student learning
- Improves student retention
- Gives us immediate feedback on student understanding.

Value of Interactive Teaching

Improves student learning

Hake, 1998 compared pre- and post-course test results for 6000 students from high school and university physics courses, and found significantly more improvement in students in courses that used interactive-engagement methods.

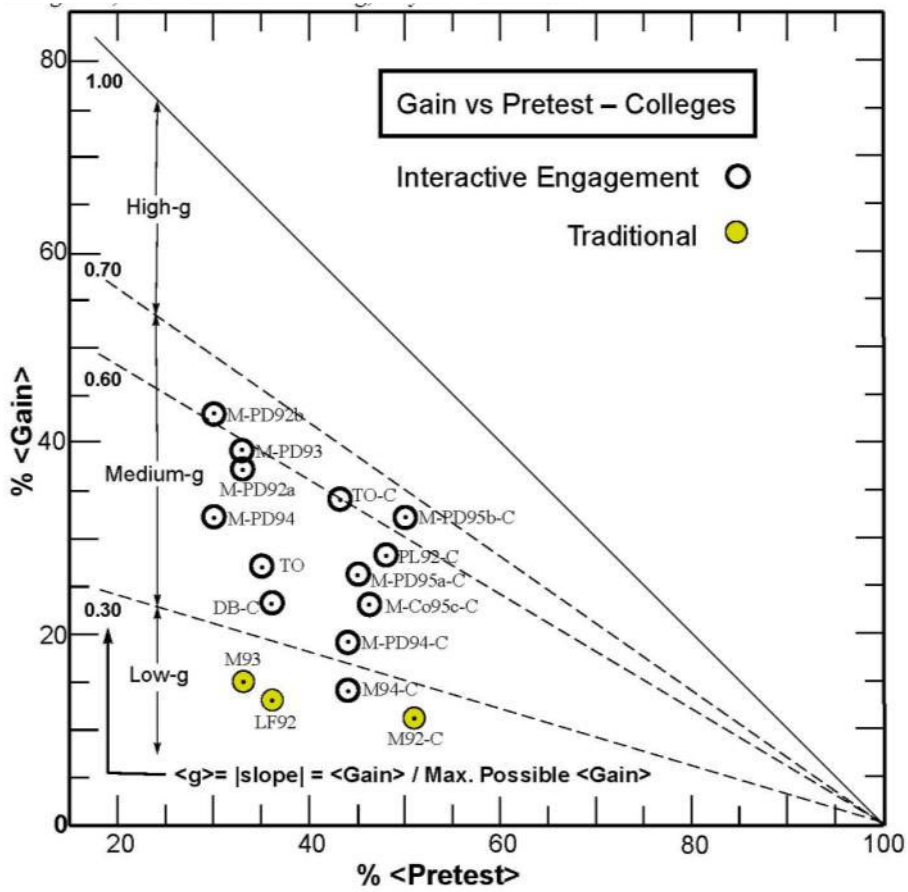


Fig. 3b. %<Gain> vs %<Pretest> score on the conceptual MD or FCI tests for 16 *college* courses enrolling a total of N = 597 students. The course code "-C" indicates a calculus-based course.

On the Cutting Edge
Professional Development for Geoscience Faculty 2010-11

Value of Interactive Teaching

Interactive teaching improves student learning

- Student attention is focused on the class.
- **All** students think about and apply material during class.
- **All** students practice thinking and talking using the language of geoscience.

Value of Interactive Teaching

Improves student retention

Wenzel, 1999, reported that a class that used think-pair-share for 2-3 minutes every 12-18 minutes of lecture **remembered more** of the lecture material directly after the class and twelve days later than the control class that heard the same lecture without the think-pair-share breaks.

Value of Interactive Teaching

- Improves student learning
- Improves student retention
- Gives us immediate feedback on student understanding.
  - Is more time needed on a concept?
  - Is the class ready to move on?

Gallery Walk

http://mst-certi.wikispaces.com/Gallery+Walks

- Post each question on top of a sheet of paper
- Arrange groups at each poster
- Give group a few minutes to answer the question, writing on the sheet of paper
- Instruct groups to rotate, discuss question and response(s), then respond in writing
- After groups have rotated through all posters and are back at the original, each group reports key points

Gallery Walk Examples

- In first day of class, questions about climate change (or ….)
- Following a reading assignment on mass extinctions, the following questions
  - What is a mass extinction?
  - Are we currently experiencing the 6th great mass extinction? Why or why not?
  - Do you consider biological conservation a priority? Why or why not?
  - What could you do in your daily life to slow down modern extinction rates?
- Maps
- Exam review questions

Gallery Walk

- Allows for both consensus and debate
- Provides opportunity to gauge prior (current) knowledge, to introduce students to issue
- Requires movement around the room

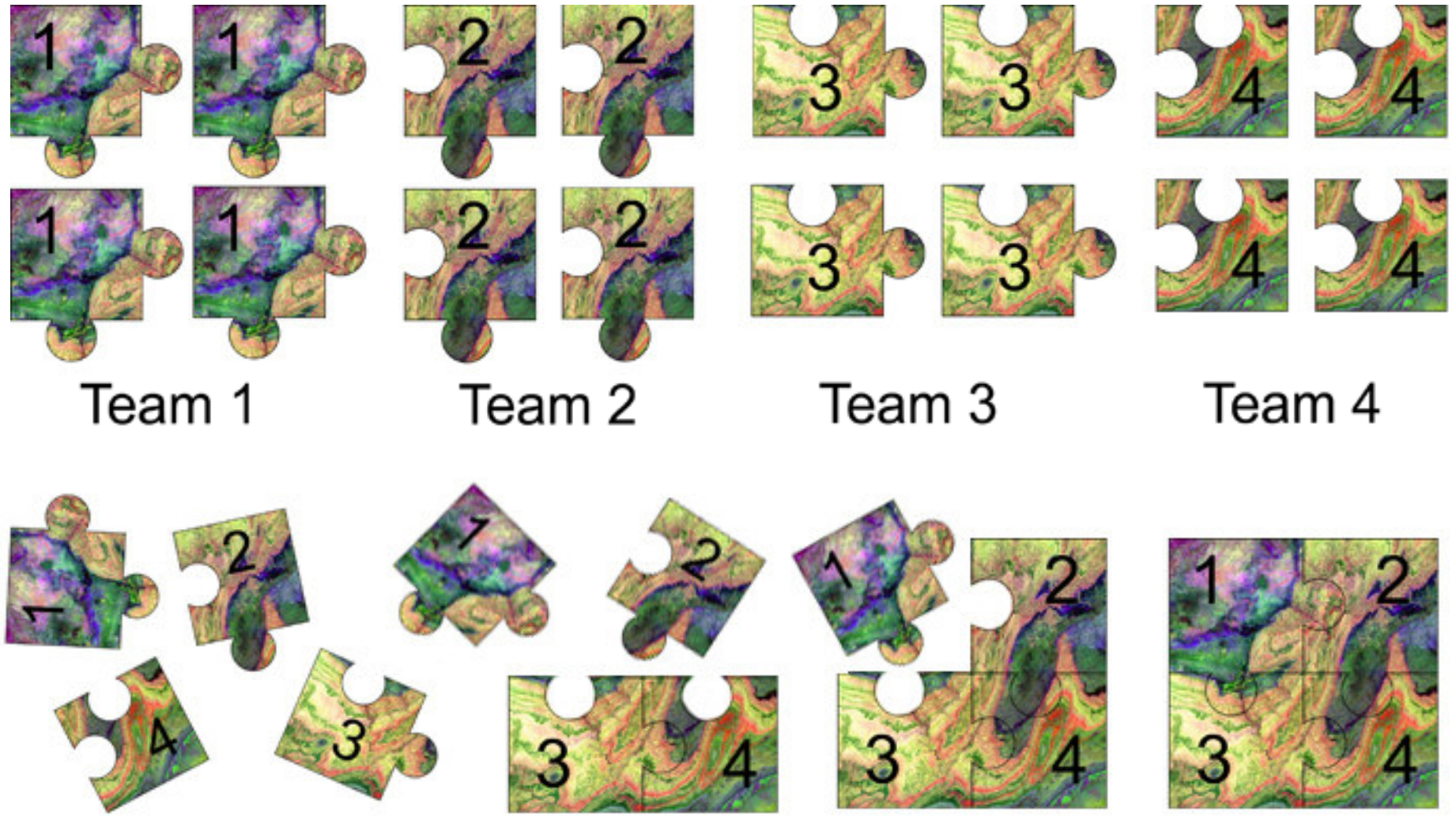
Gallery Walks

- THINK about how you might apply Gallery Walks and jot it down on a piece of paper.

Gallery Walks

- *If you'd like to*, share your example by typing into text box.
- Please take a moment to read through the other responses, and gain new ideas.
- If you have a question about Gallery Walks, please ask now.

Jigsaw



From Barbara Tewksbury http://serc.carleton.edu/NAGTWorkshops/teaching_methods/jigsaws/index.html

Jigsaw Examples

- **Plate tectonics.** Teams analyze earthquake, volcano, seafloor age, and topography data maps, then combine to draw plate boundaries and interpret processes.

- **Google Earth.** Each team analyzes different locations that show similar features (e.g., barrier islands, folds, valley glaciers, etc.), then combine to discuss similarities and differences of the feature.

- **Earthquake epicenter location.** Each team receives a different set of seismograms. After each team determines the P-S time differential and distance to the earthquake, mixed groups compare data to locate the earthquake.

Jigsaws

- THINK about how you might apply Jigsaws.

On the Cutting Edge
Professional Development for Geoscience Faculty 2010-11

Jigsaws

- *If you'd like to*, share your example by typing into text box.
- Please take a moment to read through the other responses, and gain new ideas.
- If you have a question about Jigsaws, please ask now.

Managing the Class

- **Accept** that your class will be noisy.
- **Visit** groups to see if they are on track.
- Find an effective way to **bring the class back together**.
- Pick groups to **report** at random or have all groups report.
- ***Possible*** to have each student turn in something written for a grade.

On the Cutting Edge

Professional Development for Geoscience Faculty 2010-11

Do you have any lingering questions about interactive teaching?

If you have a question, please type it in the text box.

Places to go for more ideas

- **Interactive Lectures**

  http://serc.carleton.edu/introgeo/interactive/index.html

- **Expanding your Teaching Toolkit: Active Learning Methodologies**

  http://serc.carleton.edu/NAGTWorkshops/earlycareer/teaching/toolkit.html

On the Cutting Edge

Professional Development for Geoscience Faculty 2010-11

Preparing for an Academic Career in the Geosciences Workshop

June 6-9, 2011

University of Nebraska
Lincoln, Nebraska

Deadline March 11, 2011

*Three main goals of the workshop are for participants to become **more effective teachers**, **stronger candidates** for academic jobs, and **better prepared** future faculty members who will be able to make a quick and effective start in teaching and research.*

http://serc.carleton.edu/NAGTWorkshops/careerprep2011/index.html

On the Cutting Edge

Professional Development for Geoscience Faculty 2010-11

Pursuing an Academic Career
Virtual Event Series

- February 4, 2011 (Friday): **Negotiations in the Hiring Process**, Leaders: Timothy Bralower, Pennsylvania State University and Scott Fendorf, Stanford University

- April 22, 2011 (Friday): **Developing Yourself as a Teacher: Teaching Philosophies, Teaching Styles, and Teaching Statements**, Leaders: Rachel Beane and Heather Macdonald

- May, 11 2011, (Wednesday)**: Strategic Early Career Planning**, Leader: Rachel O'Brien, Allegheny College

- June 21, 2011 (Tuesday): **Faculty Positions: Exploring the Range of Possibilities**, Leaders from a variety of academic institutions.

On the Cutting Edge
Professional Development for Geoscience Faculty 2010-11

Thank you!

- We're glad you were able to join us today.

- Please help us by completing an evaluation form at

http://serc.carleton.edu//NAGTWorkshops/careerdev/AcademicCareer2011/jan_eval.html