2021 Earth Educators' Rendezvous Online Morning Workshop Leader Webinar

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NOW RECORDING

Earth Educators' Rendezvous
Morning Workshop Leader Webinar

- Introduction
- Workshop Design Best Practices
- Utilizing the Web Tools
- Evaluation Instruments
- Code of Conduct

Role of morning workshops at EER

- Provides important educational anchor for Rendezvous
- Workshops are interactive & build on research-based pedagogies.
    - Learning from experts
    - Learning from peers
- Unique format –
    - opportunity for “homework”, daily feedback.

Role of morning workshops at EER

- Include time to work on relevant courses & programs.
- Connect with afternoon program
    - Technical talks, posters, teaching demos, plenaries, mini-workshops.
- See the full program at: https://serc.carleton.edu/earth_rendezvous/2021/program/index.html

NAGT

Earth Educators' Rendezvous

Before we Begin – What are your currently thinking about your workshop?

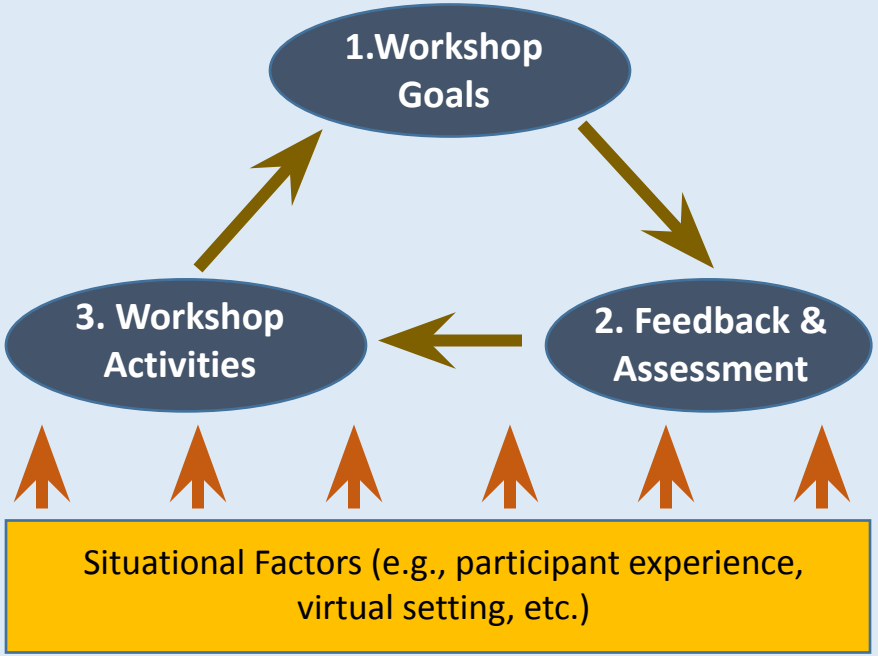
What do you want to accomplish at your workshop? (*what are your goals*?)

- **Write into the chat at least one workshop goal.**
- **If you've already given it a fair amount of thought, also write one thing you have thought about doing to meet that goal.**

Workshop Design and Best Practices

Think of it as a well-designed lesson sequence

- What are your goals for the workshop?
- How will you assess if the participants successfully met your goals?
- What activities will allow you to achieve your goals for the workshop in a virtual setting?



General Webinar/Workshop Design Principles

Engage: Try to engage your participants from the very start. Throughout the webinar maximize potential participant activities.

Carefully balance your speaking with participant engagement.

Learn: Provide participants with relevant materials and explanation based on the stated objective of the webinar.

Reflect/Apply: Provide time for participants to reflect on the presented material and potentially apply it to their own goals for attending.

Repeat this cycle throughout the workshop

Workshop Best Practices

Engage: Try to engage your participants from the very start. Throughout the webinar maximize potential participant activities.

- What were some strategies this presenter used to engage participants? Use the Zoom Chat Box to answer.

Presenter: **Matt Krehbiel**

Example from September 12, 2019: **Using the NGSS to Change Worlds**

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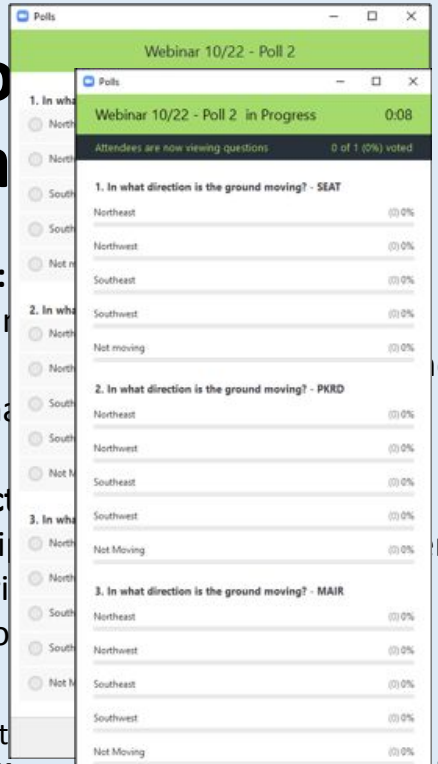

Learn:
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Present
Karen Kortz (
Beth Pratt-Si

de Island)

Example from October 22, 2019: **Using GPS Data to Teach about the Earth in Introductory Undergraduate Courses: Plate Tectonics, Earthquakes, Water Cycle, and Ice Mass Change**

Workshop Best Practices

- **Active engagement of participants during the workshop**: Nothing is deadlier or less effective than a workshop where participants do not participate. Give people an opportunity to participate actively in every session using a variety of techniques. (*Communicate w/ SERC Staff to see if your ideas are possible*)
- **Model effective pedagogy**: The most successful webinars are those taught with good active pedagogy in mind and the least successful sessions are those where a presenter simply talks or reads from the slide.
- **Emphasize practical applications**: An emphasis on practical applications and strategies is an important aspect of effecting change in teaching practice.
- **Give participants time to interact and share experience/knowledge**: Participants bring valuable experience and ideas to webinars. Structured mechanisms for sharing experiences and expertise must be an integral part of every workshop program.

Workshop Best Practices

- **Provide materials and examples**: Examples of how the webinar topics can be applied in the classroom and field are particularly valuable resources for participants.
- **Give participants time to make progress on a specific task that connects the workshop topic to their teaching**: Time to work individually during the workshop allows participants to reflect and to make progress on adapting webinar content to their own needs.
- **Make sure that participants leave the workshop with specific plans for future action**: Workshops can produce a wide variety of results ranging from changes in teaching practice and development of new learning resources to department-level planning and community-wide action. In all cases, workshop time devoted to planning next steps and feedback from peers is critical.

Workshop Preparation: *For You*

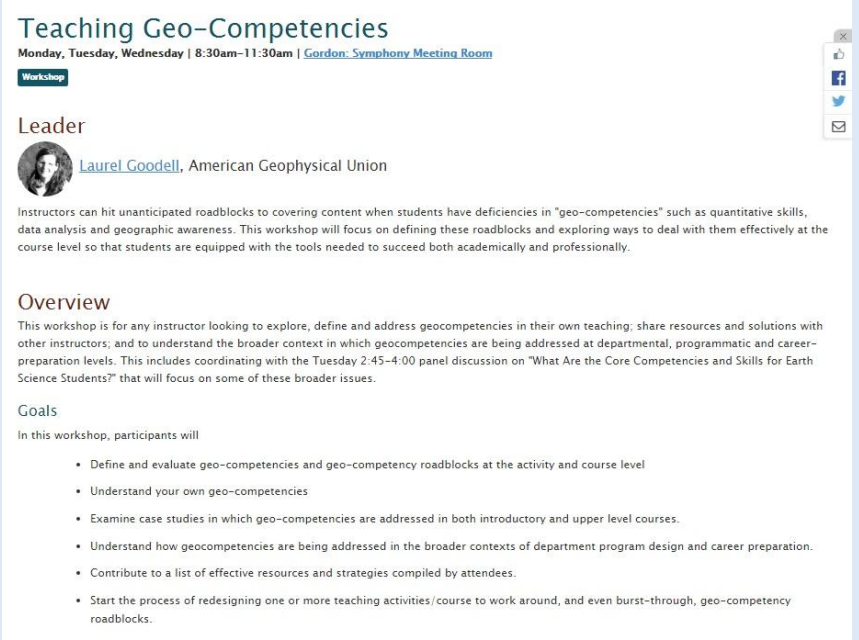
Workshop descriptions are currently online

Additional pages for

- Daily program
- Participants list
- Other, for example:

  Pre-meeting surveys

  Participant workspaces



Teaching Geo-Competencies

Monday, Tuesday, Wednesday | 8:30am–11:30am | Gordon: Symphony Meeting Room

Workshop

Leader

Laurel Goodell, American Geophysical Union

Instructors can hit unanticipated roadblocks to covering content when students have deficiencies in "geo-competencies" such as quantitative skills, data analysis and geographic awareness. This workshop will focus on defining these roadblocks and exploring ways to deal with them effectively at the course level so that students are equipped with the tools needed to succeed both academically and professionally.

Overview

This workshop is for any instructor looking to explore, define and address geocompetencies in their own teaching; share resources and solutions with other instructors; and to understand the broader context in which geocompetencies are being addressed at departmental, programmatic and career-preparation levels. This includes coordinating with the Tuesday 2:45–4:00 panel discussion on "What Are the Core Competencies and Skills for Earth Science Students?" that will focus on some of these broader issues.

Goals

In this workshop, participants will

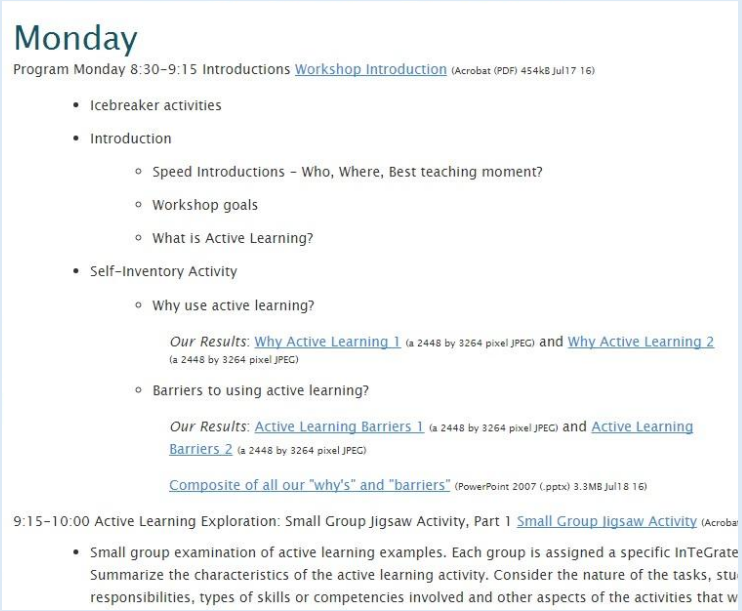
- Define and evaluate geo-competencies and geo-competency roadblocks at the activity and course level
- Understand your own geo-competencies
- Examine case studies in which geo-competencies are addressed in both introductory and upper level courses.
- Understand how geocompetencies are being addressed in the broader contexts of department program design and career preparation.
- Contribute to a list of effective resources and strategies compiled by attendees.
- Start the process of redesigning one or more teaching activities/course to work around, and even burst-through, geo-competency roadblocks.

Workshop Preparation: For You

Prepare and upload daily program (April 15)

Identify daily leader roles. Who is:

- Leading activities
- Creating materials
- Adding materials to workshop pages (and when?)
- Reviewing pre-workshop surveys or distributing homework



Monday

Program Monday 8:30–9:15 Introductions Workshop Introduction (Acrobat (PDF) 454kB Jul17 16)

- Icebreaker activities
- Introduction
  - Speed Introductions – Who, Where, Best teaching moment?
  - Workshop goals
  - What is Active Learning?
- Self-Inventory Activity
  - Why use active learning?

    Our Results: Why Active Learning 1 (a 2448 by 3264 pixel JPEG) and Why Active Learning 2 (a 2448 by 3264 pixel JPEG)
  - Barriers to using active learning?

    Our Results: Active Learning Barriers 1 (a 2448 by 3264 pixel JPEG) and Active Learning Barriers 2 (a 2448 by 3264 pixel JPEG)

    Composite of all our "why's" and "barriers" (PowerPoint 2007 (.pptx) 3.3MB Jul18 16)

9:15–10:00 Active Learning Exploration: Small Group Jigsaw Activity, Part 1 Small Group Jigsaw Activity (Acrobat

- Small group examination of active learning examples. Each group is assigned a specific InTeGrate
  Summarize the characteristics of the active learning activity. Consider the nature of the tasks, stu
  responsibilities, types of skills or competencies involved and other aspects of the activities that w

Workshop Preparation: *For Your Participants*

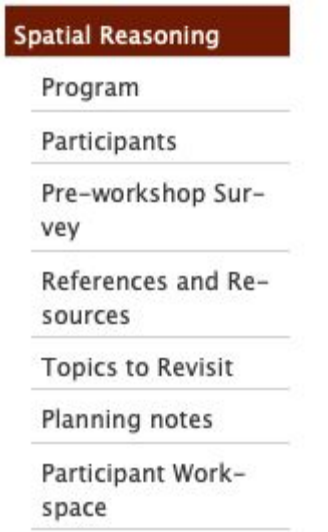
Please require some preparation in advance of the workshop.

- Coming prepared is as important for a workshop as it is for a class.
- A variety of approaches can be used to prepare participants for the workshop:
  - Reflection on their workshop goals
  - Participation in pre-workshop discussion or surveys of needs
  - Review of applicable article(s).
- Discuss your pre-workshop needs with your SERC support person so that any needed pages or forms can be in place.

Utilizing SERC Web Tools

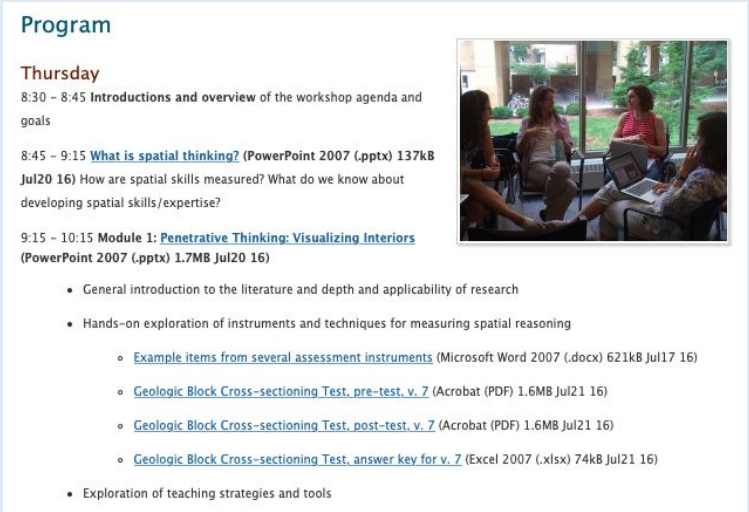
Make use of the workshop website

- Program
- Pre-workshop Survey (optional, but helpful)
- Participant Workspace (optional, but useful!)
- Additional pages can be added to your website if you wish



Workshop Program Page

Use the program page to organize documents that you would like the participants to access either prior to or during the workshop. The website will be a resource that your participants can return to when they want to make use of what they learned. **Note:** we cannot host copyrighted documents on the public program page; these will need to be in your private workspace.



Program

Thursday

8:30 – 8:45 **Introductions and overview** of the workshop agenda and goals

8:45 – 9:15 What is spatial thinking? **(PowerPoint 2007 (.pptx) 137kB Jul20 16)** How are spatial skills measured? What do we know about developing spatial skills/expertise?

9:15 – 10:15 **Module 1:** Penetrative Thinking: Visualizing Interiors **(PowerPoint 2007 (.pptx) 1.7MB Jul20 16)**

- General introduction to the literature and depth and applicability of research
- Hands-on exploration of instruments and techniques for measuring spatial reasoning
  - Example items from several assessment instruments (Microsoft Word 2007 (.docx) 621kB Jul17 16)
  - Geologic Block Cross-sectioning Test, pre-test, v. 7 (Acrobat (PDF) 1.6MB Jul21 16)
  - Geologic Block Cross-sectioning Test, post-test, v. 7 (Acrobat (PDF) 1.6MB Jul21 16)
  - Geologic Block Cross-sectioning Test, answer key for v. 7 (Excel 2007 (.xlsx) 74kB Jul21 16)
- Exploration of teaching strategies and tools

Here's an example from a 2016 workshop on Spatial Reasoning in the Geosciences (https://serc.carleton.edu/earth_rendezvous/2016/program/morning_workshops/w12/index.html).

Links go to presentations, resources, or subsidiary web pages in the workshop website.

Pre-workshop Survey: optional

Pre-workshop Survey

Hello everyone! We are looking forward to our workshop on Spatial Reasoning in the Geosciences, at the 2016 Earth Educators' Rendezvous. We'd appreciate it if you would take a few minutes to answer the questions below, to help us shape the workshop to your interests. While there is no hard deadline for responses, we're more likely to be able to shape the workshop to your needs if you respond before July 7th, and earlier would be even better. Thanks!!

– Eric and Carol

Your name:
Carol Ormand

Your institution:
Carleton College

Your email address:
cormand@carleton.edu

What level(s) of students do you teach? Check all that apply:
- ☐ high school
- ☐ undergraduate non-major
- ☐ undergraduate (geo)science major
- ☐ grad student

- Who are your participants?
- What do they want to learn?
- What do they already know about your workshop topic?

https://serc.carleton.edu/dev/earth_rendezvous/2016/program/morning_workshops/w12/survey.html

What level(s) of students do you teach? Check all that apply:
- ☐ high school
- ☐ undergraduate non-major
- ☐ undergraduate (geo)science major
- ☐ grad student

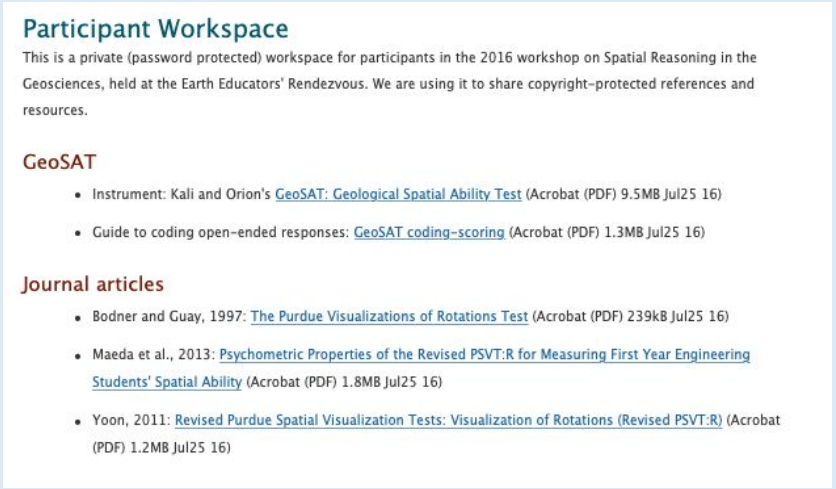
What are the one or two spatial thinking tasks you pose to your students that they find the **most** challenging? It will help us to know something about the context; e.g. "Many of my physical geology students struggle to draw cross-sections through deformed sedimentary rocks" is more helpful than "Cross-sections."

If you could help your students to do one spatial thinking task better, what would it be?

Is there anything else that you particularly hope to learn at this workshop?

Workspace

- **Private, password-protected** space
- Share copyrighted materials
- Set up pages to facilitate brainstorming, discussion, resource development, ….
- Synthesize workshop sessions



Participant Workspace

This is a private (password protected) workspace for participants in the 2016 workshop on Spatial Reasoning in the Geosciences, held at the Earth Educators' Rendezvous. We are using it to share copyright-protected references and resources.

GeoSAT

- Instrument: Kali and Orion's GeoSAT: Geological Spatial Ability Test (Acrobat (PDF) 9.5MB Jul25 16)
- Guide to coding open-ended responses: GeoSAT coding-scoring (Acrobat (PDF) 1.3MB Jul25 16)

Journal articles

- Bodner and Guay, 1997: The Purdue Visualizations of Rotations Test (Acrobat (PDF) 239kB Jul25 16)
- Maeda et al., 2013: Psychometric Properties of the Revised PSVT:R for Measuring First Year Engineering Students' Spatial Ability (Acrobat (PDF) 1.8MB Jul25 16)
- Yoon, 2011: Revised Purdue Spatial Visualization Tests: Visualization of Rotations (Revised PSVT:R) (Acrobat (PDF) 1.2MB Jul25 16)

You can use the workspace during the workshop, while you are in a Zoom session, to facilitate interactions:

- Set up discussion groups with templated pages in the workspace; send each group to a breakout room with instructions about what they are going to do in the workspace
- Post a question on a page with a "discussion thread" below it; have participants post their answers in the discussion box
- Share your screen while you take notes during a whole group discussion

Learn more: http://serc.carleton.edu/NAGTWorkshops/workshops/workspace/index.html

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EARTH EDUCATORS' RENDEZVOUS

SERC Support Team*

Make use of our expertise.

SERC staff have experience supporting, and in many cases leading, online workshops and other professional development activities.

If you know what you would do in a face-to-face setting and are not sure how to translate it to the online environment, ask you SERC support person what tools and strategies we recommend.

Monday-Wednesday Workshop assignments:

- Preparing for an Academic Career - **Monica**
- Vision and Change - **John**
- Emerald Isle to Red Planet - **Allison**
- Inclusive Teaching Practices - **Bradlee**
- Student Virtual Contexts - **Monica**
- Writing Retreat - **Mitchell**

Thursday-Friday Workshop assignments:

- Student Mental Health - **Bradlee**
- Visual Representations - **Monica**
- Storytelling for Change - **Bradlee**
- GER Statistics - **John**
- Feedback Loops - **Allison**
- Online Courses - **Allison**
- Adapting Lessons - **Mitchell**

* These assignments may change for day-of support, but you can contact the person listed here for preparatory support for your workshop. They are also posted on the Convener Info web page.

Evaluation Instruments

We (you) will use standardized evaluation surveys for formative and summative evaluation purposes. Your SERC support person will create these survey instruments in your workshop website. You may add questions to the roadcheck if you get them to us in advance.

Please leave time in your program for workshop participants to complete these surveys **during** the workshop. This time is included in the program templates in your websites. These data inform conveners about the workshops and can help us as we design programming for future years.

- Workshop roadchecks (online)
- End of Workshop Evaluation (online)
- For both instruments, your SERC support person will send you a link that will allow you to see the responses, but not who wrote them

Technical Details

Each morning workshop will have its own Zoom meeting

Zoom meetings will be hosted by SERC or other EER staffperson

All typical Zoom features will be enabled (screensharing, breakout rooms, chat, whiteboards, polling, etc.)

Meetings will be password protected, and connection information will only be visible to registered participants

Using Zoom to support engaged pedagogies: https://serc.carleton.edu/241721

Important Dates

April 15, 2021: Prepare and add daily program to website. Identify daily leader roles:leading activities, creating materials, adding materials to workshop pages (and when?), reviewing pre-workshop surveys or distributing homework.

June 14, 2021: Workshop program is finalized – agenda published with schedule down to the half hour. Tell your SERC support person what features you want (pre-surveys, workspace, additional questions for evaluation instruments).

June 28, 2021: Finalize details of workshop support with SERC staff (sooner is better – this is the absolute last date to make requests!). This includes any questions you want in a pre-workshop survey, any questions you want to add to evaluation instruments, and requesting a workspace if you want one.

Help Make Connections

- Workshops are highly valued opportunities to build connections
- Encourage participants continue conversations (e.g. email, etc.)
  - You could make a page for participants to share their email addresses in the participant workspace
- Promote other opportunities for participants to interact during the EER – e.g. optional evening events, roundtable discussions

NAGT Events Code of Conduct

In fulfilling its vision and mission, NAGT promotes, provides, expects and endorses a professional and respectful atmosphere and values a diversity of views and opinions at NAGT supported events and programs. All NAGT meetings and events participants are expected to abide by the NAGT Code of Conduct, which applies in all venues, events, and on-line forums associated with NAGT. This Code of Conduct is intended to align with the American Geosciences Institute's *Statement on Harassment in the Geosciences*. Please read the full NAGT Code of Conduct Policy for details.

https://nagt.org/nagt/about/code_of_conduct.html

Besides finding time, what is the most challenging thing you need to do to get ready for the workshop?

Type your answer in the chat and we will discuss the priorities from the group.

Possible Answers…

- You don’t know who is coming in advance
- This is a really short amount of time
- Balancing learning and applying
- Creating a record of what happened
- making time for metacognition and reflection

Questions?