Inclusion in the Geosciences: Instructional Approaches to Access and Accommodation

Friday, July 20th at 8:30 AM - 11:30 AM

Participants in this workshop will:

- Learn about common barriers to access & inclusion within the geosciences and broader STEM education
- Be introduced to the principles of Universal / Inclusive Design for Learning
- Explore accommodations for both physical and non-apparent disabilities

Note: As of 15 Aug 2018, new contact information:
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EER 2018 July 20  
Inclusion in the Geosciences-Instructional Approaches to Access and Accommodation

08:30  Welcome Back and Refresh

08:35  **Field-Based Accessibility**  
Revisit the Field Audit  
Field-Based Accessibility: Challenges and Examples  
Modes of Delivery (Online, Face2Face, Hybrid / Blended)

09:30  **Focus - Highlighting accommodations for other disabilities**  
Ending the Awkward / People First Language  
Blind, Low Vision, and Color Vision Deficiency Resources  
Deaf and Hard-of-Hearing

10:15  **Brain Break**

10:30  **Focus - Highlight Accommodations for Non-Apparent Disabilities**  
Neurodiversity

11:15  **Reflection and Workshop Evaluation**

11:30  Adjourn Workshop
Fieldwork Audit to Anticipate Barriers


Use the audit in the above citation (Table 1 on page 44) and identify barriers in field courses you’ve experienced!

How can those barriers be removed?
Let’s *audit*!

Each person uses a provided large format form (double-sided):

- Each person think of a field trip location you have used or plan to use and can visualize now.

- Work on your form (for the sake of this workshop today, please spend ~ 5 min or so). Please be sure to include your name and site location.

- Post to room wall so we can do a “Gallery Tour” (one can be mobile in many different ways, so rather than call it a “walk”…let’s call it a “tour” ).

- Please pick 1 or 2 peers’ posting/s and review/comment/query (you can use the whiteboard markers).
Accessibility in the Field

Ability to provide access dependent on:

• Student ability level
  Type and degree of disability, officially or unofficially diagnosed

• Support systems
  Office of disability services
  Outside groups (IAGD)

• Knowledge of accessible practices
Accessibility in the Field

Field-site accessibility and purposeful site selection

• What are my learning outcomes? Can this be accomplished elsewhere?
• What is the ability level of my students?
• Will I be physically isolating a student from their peers?

Some aspects cannot be made 100% accessible – but how can an inclusive environment still be cultivated?
Planning Deliberately
Accessible Field Experience
GSA Vancouver October 2014
Planning Deliberately
Accessible Field Experience
GSA Denver Sept 2016
Accessibility in the Field

Mixed-Ability Grouping
Accessibility in the Field

Synchronous or Asynchronous Remote Experiences
Accessibility in the Field

http://stemforall2017.videohall.com/presentations/920
(Run Time: 3 Minutes Audio and Captioned)
Making Tactiles: Low to High Tech

3D print, then painting or texturizing to portray varying information beyond topography, for instance.

Draw or photocopy image then add texture (glue-gunned lines, pasting fabric, sandpaper or sticking craft “gems” to image).
A few geoscience education research-based, peer-reviewed articles about accessible field trips to get you started:


9) Examine the photograph below of the quartzite from Pilot Mountain State Park in North Carolina and answer the questions. The black stripes in the rock are dark minerals that represent the original bedding before metamorphism.

(Image courtesy of colleague Gretchen Miller at Wake Tech Community College.)
Instructing Student to Request a Tactile Version

Example of Alternate Text for Diagram in Lab Manual

**Title:**
A syncline is a fold that forms in layers of sedimentary rocks in which the layers dip down and then back up like the letter 'U'. An **Description:**
anticline is a fold that forms in layers of sedimentary rock in which the layers go up and then down, like a capital letter 'A'. Ask your instructor for a tactile version of this figure.

Titles and descriptions provide alternative, text-based representations of the information contained in tables, diagrams, images, and other objects. This information is useful for people with vision or cognitive impairments who may not be able to see or understand the object.

A title can be read to a person with a disability and is used to determine whether they wish to hear the description of the content.

(Image courtesy of colleague Gretchen Miller at Wake Tech Community College.)

**Example:**

Sedimentary rocks are designated as anticlines or synclines depending on whether strata are buckled up or down. **Folding** is the result of deformation. In the following diagram, older strata are buckled upward in an anticline, and younger strata are buckled downward in a syncline.
Example of Providing Lab Information in Different Ways for Online/Hybrid Class & Making Videos Accessible

Lab 12 - Topographic Maps #1

Lab 12 - Topographic Maps #1 Lab Orientation Video

Enabled: Statistics Tracking
Attached Files: Lab 12 Orientation Video Transcript (Word Document) (16.389 KB)

Click on this link to view the Lab 12 - Topographic Maps #1 Lab Orientation Video on YouTube: https://youtu.be/Yomm9ae3djC (opens in new window). The video covers some important information to get you started on Lab 12.

The attached Word Document contains a transcript of the Lab 12 - Topographic Maps #1 Lab Orientation Video.

Lab 12 - Topographic Maps #1 - Instructions & Hints

Enabled: Statistics Tracking
Attached Files: Word Document (521.257 KB)

READ THE ATTACHED DOCUMENT FIRST! This document explains the exercise for Lab 12 - Topographic Maps. Take the Lab 12 Quiz to receive credit for completing this lab.

Make sure you complete the TMYN Slope & Topographic Maps and Unit Conversions modules before completing this lab, because they will help you complete some of the problems in the lab. It is also recommended, though not required, that you read the TMYN Constructing a Topographic Profile module before completing this lab.
Example of Closed Captioning in YouTube Video

Image courtesy of colleague Gretchen Miller at Wake Tech Community College.

It will then go between the points that are higher and lower than 500 feet.
09:30  **Focus - Highlighting accommodations for other disabilities**

- Ending the Awkward / People First Language
- Blind, Low Vision, and Color Vision Deficiency Resources
- Deaf and Hard-of-Hearing
Ending the Awkward

Ask! Don’t assume.

“Disability” is stigmatized in our society, and a change in the cultural perspective is long overdue. Individuals don’t live WITH a disability, they LIVE, just like everyone else… and shouldn’t be treated any differently than anyone else working to follow their passions. Doing so doesn’t make them brave, or inspiring.

“Living with a disability” implies a stigmatized connotation. Suggesting that doing so is “brave” or “inspiring” or even “courageous” further suggests that this stigma is founded upon fear. Why should anyone be afraid of working to pursue their own interests, achieve their personal goals, and be successful? Why?

Don’t assume you know what it is like to live in someone else’s life. ASK! Talk to them. Take a few minutes to read the article “I’m Not Brave” by Katie Rose Guest Pryal, posted at https://chroniclevitae.com/news/722-i-m-not-brave?cid=chesectionpromo.
Ending the Awkward

The Basics
Awkward moments? Life can be full of them! If you’ve ever felt awkward about talking to someone who’s disabled, don’t worry. You’re not alone, help is at hand. It’s time to end the awkward. We can all do it.

Keep these five things in mind:

1. **See the person. Not just their impairment.** He’s Pete who likes pub quizzes and Coen Brothers films, not “that guy in the wheelchair.”
2. **Try not to make assumptions** about what someone can do, how they live or how being disabled affects them. You’d hate it if someone made assumptions without getting to know you, right?
3. **Unsure or need to know something? Ask!** Do it respectfully.
4. **Accept what the person says** about themselves and their impairment. Remember that they know themselves better than you do.
5. **Remember that not all conditions are visible.**
Ending the Awkward

See how you can apply these ideas at https://www.scope.org.uk/end-the-awkward.

The content in “The Basics” was developed with help from several organizations. For more information, please visit our friends at Scope: About Disability at https://www.scope.org.uk/
People First Language

- A disability descriptor is simply a medical diagnosis.
- People First Language respectfully puts the person before the disability.
- A person with a disability is more like people without disabilities than different!
- See handout from Kathy Snow, also available at: https://www.disabilityisnatural.com/
Let’s Practice People First Language

Say:

Instead of:

__________________________________________
The handicapped or disabled.

__________________________________________
She’s mentally retarded.

__________________________________________
He’s confined to/is wheelchair bound.

__________________________________________
Brain Damaged

__________________________________________
Normal or healthy kids.

__________________________________________
Handicapped Parking
Touch Terrain - Iowa State University

http://touchterrain.geol.iastate.edu/
Accommodations for Deaf/Hard-of-Hearing Students

• Reflections from my own teaching experiences:
  • All videos should have closed captioning if possible, transcript at a minimum
  • Sign language interpreter may need assistance for signs in a science course
  • Model good, clear communication with student and interpreter in class to ease interactions with other students

• The IAGD website has lots of other great resources: http://www.theiagd.org/resources/deaf-and-hard-of-hearing-resources/
Deaf and Hard-of-Hearing

Signing Math & Science


For Signing Math & Science, TERC and Vcom3D used SigningAvatar® assistant technology to develop illustrated, interactive 3D standards-based sign language dictionaries that offer students in grades K-6 and 9-12 who are deaf and hard of hearing increased access to the same learning opportunities that hearing students enjoy. The dictionaries are available as Web and video versions and as iPhone Apps.

- Signing Science Dictionary (SSD)—a dictionary of science terms and definitions for grades 4-8. This work was funded in part by grants from NEC Foundation of America, the National Science Foundation (HRD-0533067), and the Department of Education (H327A060026).
- Signing Science Picture Dictionary (SSP)—formerly called the Signing Science Pictionary is a dictionary of science terms and definitions for grades K-4. This work was funded in part by grants from the Carl and Ruth Shapiro Family Foundation, Disability Inclusion Initiative and the Department of Education (H327A080040).
- Signing Math Dictionary (SMD)—a dictionary of mathematics terms for students in the elementary and middle grades. This work was funded in part by a grant from the National Science Foundation (HRD-0833969).
- Signing Math Picture Dictionary (SMP)—formerly called the Signing Math Pictionary is a dictionary of math terms and definitions for grades K-4. This work was funded in part by a grant from the Department of Education (H327A100074).
- Signing Earth Science Dictionary (SESD)—a dictionary of Earth science terms for grades 9-12. This work was funded in part by a grant from the National Science Foundation (GEO-091375).
- Signing Life Science Dictionary (SLSD) and Signing Physical Science Dictionary (SPSD)—a dictionary of life science terms and a dictionary of physical science terms for grades 9-12. This work is being funded in part by a grant from the National Science Foundation (DRL-1019542).

Requires: Windows Operating System, Internet Explorer 6.0 or higher, and the SigningAvatar® plug-in.

If you are a Mac user, you must have VM Ware or Parallels installed to use the avatar-enabled websites above. Alternatively, the following options are available for Mac and iOS devices (iPhone, iPad, etc):

- iPhone apps for English versions of the SSP, SMP, SSD, SMD, SESD, SLSD, and SPSD, as well as Spanish versions of the SLSD and SPSD are available at SigningApp.com
- Video versions of the SESD, SLSD, and SPSD - compatible with Mac, Chromebook, and a wide variety of platforms and web browsers.

For additional information about Signing Math & Science, contact us.

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Deaf and Hard-of-Hearing

https://wiki.rit.edu/display/sciencelexicon/Science+Signs+Lexicon
10:15 Brain Break
10:30 Focus –

Highlight Accommodations for Non-Apparent Disabilities

Neurodiversity

Sharing Experiences with Others

Accessible Conferences
Teaching Neurodiverse Students

- Begin the semester with a discussion of diversity, including individual differences in social functioning (goal is to reduce negative reactions to awkward social behavior).
- Be transparent and let students know what to do to be successful in the class.
- Include a detailed schedule and plan of assignments in the course syllabus.
- Provide specific, explicit instructions for organizing information.
- Strive to have a predictable class routine and avoid unexpected changes to the schedule.
- Write things down and use hand gestures for communication.
- Ease the transition into each class and allow students extra time to settle in.
Teaching Neurodiverse Students

The following is a list comprised for students with Aspergers, ADHD, and Bipolar disorders:

- Provide more time to work through things
- Provide a quieter, more distraction free environment
- Make team-based activities an optional mode
- Break larger assignments into smaller, more manageable pieces
- Work one-on-one to review material and sticky points
- Recognize quickly when overwhelmed and starting into “avoidance” behavior
- Provide alternative modes for assessment (e.g. oral exams and oral assignments when writing is a challenge and presents a barrier to demonstrating learning)

(From IAGD Website; Special thanks to Diane Doser, Univ Texas - El Paso, for initiating this list.)
And as a part of the Process of Science: Please communicate to peers and more broadly about your practice thru media...

http://thebridge.agu.org/2016/10/
Making Accessibility Real: A Guide for Planning Meetings, Conferences and Gatherings

http://www.aucd.org/docs/HCBSAccessibleMeetings.pdf
11:15 Reflection and Workshop Evaluation
Please join http://theiagd.org