

Historical Context and Evaluation of Engagement in Technology Based Approaches to Accessible Geoscience Field Learning



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Remote Access to Field Work: Early Days

Wireless Coyote¹:

- Early example of connecting students in the field in real time to students in a different location using technology.
- **“We must take into account all dimensions of the situation – physical, social, task and technology – to redesign experiences with the properties of new technologies in mind”**



Remote Access to Field Work: Recent

Enabling Remote Activity (ERA)²:

- Utilized a portable wireless relay to send photos, videos and text from the field to participants just outside the field area.
 - A big step forward for inclusion in collegiate geoscience field learning, with a specific focus on improving access for students with disabilities.

Out There, In Here (OTIH)³:

- Indoor base team with access to print and digital resources, and a field team to collect observations and data at outcrops.
 - Gave a more active role to remote participants, bigger focus on collaboration between field and remote teams.

2. Gaved et al., 2008; Collins et al., 2010; Gaved et al., 2010; Stokes et al., 2012

3. Adams et al., 2010; Coughlan et al., 2010; Adams et al., 2011; Coughlan et al., 2011



Engagement in Virtual Environments

Academic Engagement⁴:

This requires:

- The ability to carry out tasks and interact with their virtual surroundings.
- Active involvement – passive observation not enough.

Social Engagement⁵:

Important because:

- Strong driver of student retention and sense of belonging in their degree field.
- Contributes to a more positive and productive learning experience.

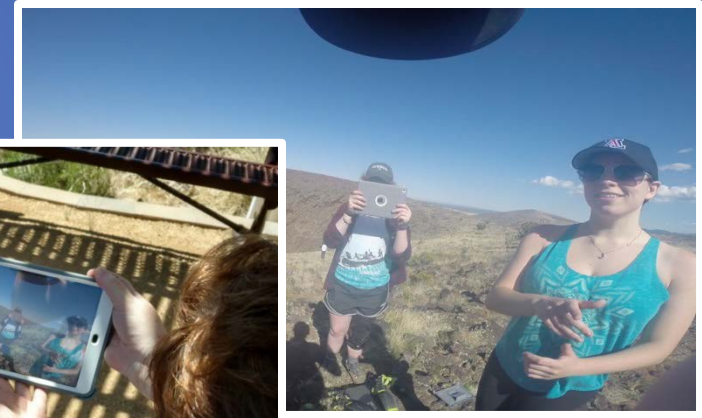
4. Saini-Eidukat et al., 2002, Joel et al., 2004, Hine, Rentoul, & Specht, 2004, Whitelock and Jelfs, 2005, Ramasundaram, et al., 2005, Reschley & Christenson, 2006, Stokes et al., 2012. 5. Garrison et al, 1993, Goodenow, 1993, Wenger et al 2002, Tinto, 2003, Stokes & Boyle, 2009, Warburton, 2009, Mogk & Goodwin, 2012; Streule & Craig, 2016

Current Project: The GEOPATHS Project for Inclusive Field Learning 2016-2017

Two year investigation of approaches to collaborative field learning through technology for improved access and inclusion.

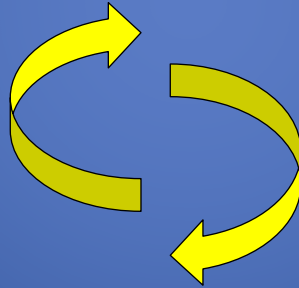
My Research Interest:

How well does remote collaboration through technology promote **academic** and **social engagement** in the field?



What is Remote Collaboration?

Communication technology is used to connect team members in different locations to undertake field learning together in real time.



Direct



Remote



Methods

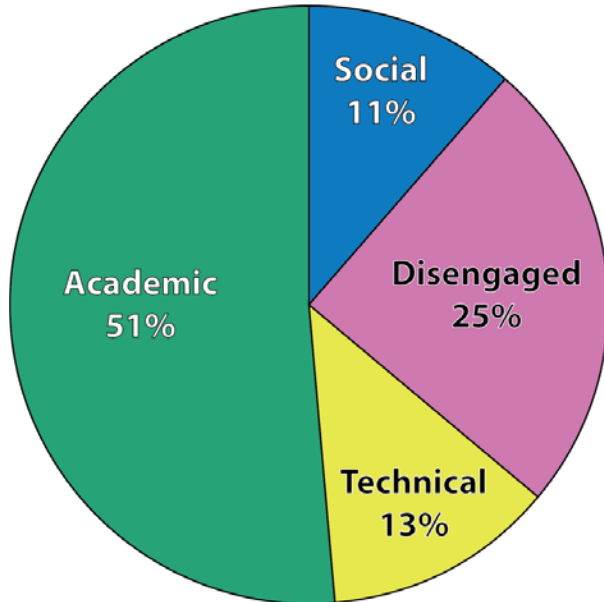
- **Video Analysis**
 - **STROBE engagement analysis of continuous GoPro footage**
(adapted from O'Malley et al., 2003)
- **Survey**
 - **Social Presence Survey** (adapted from Krejins et al., 2007)
- **Focus group interviews**
 - **Qualitative data related to engagement.**

Results: Video Analysis

Comparisons of students undertaking field work directly and through remote communication.

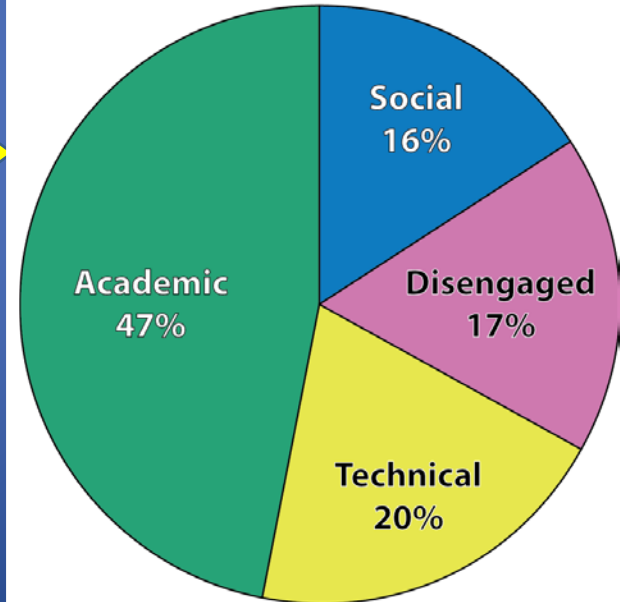
Direct

Engagement by percent total time
Direct Participants (n=5)
Structural Mapping Exercise

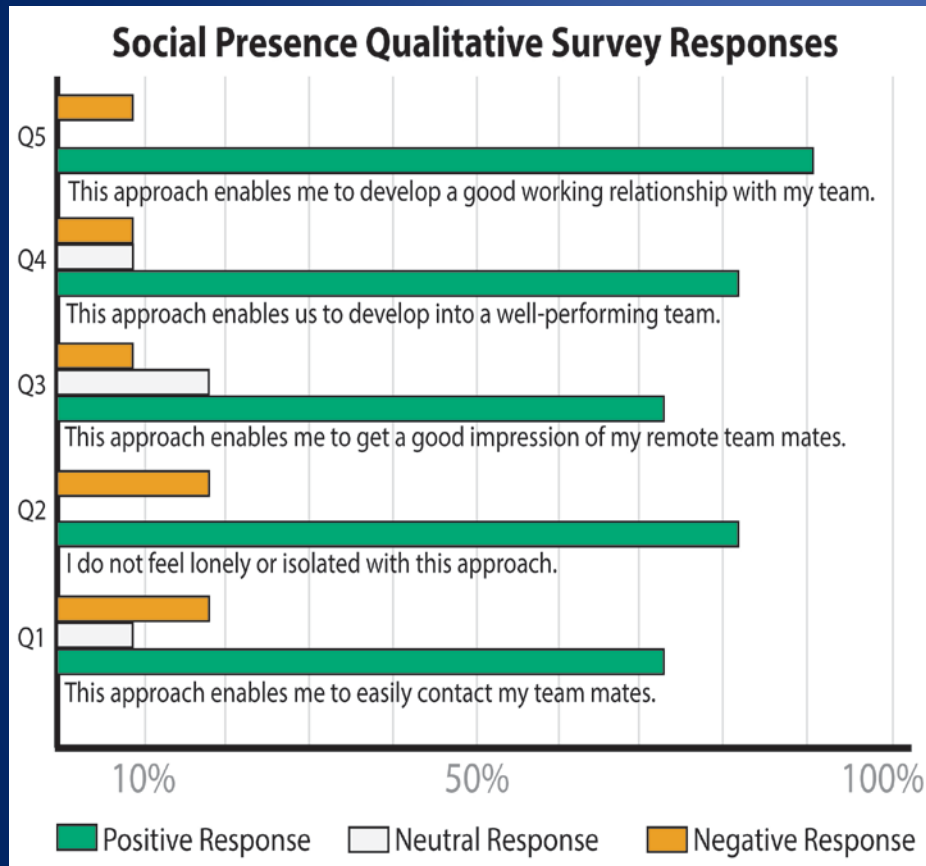


Remote

Engagement by percent total time
Remote Participants (n=4)
Glacial Geology Exercise



Results: Survey, Question 1

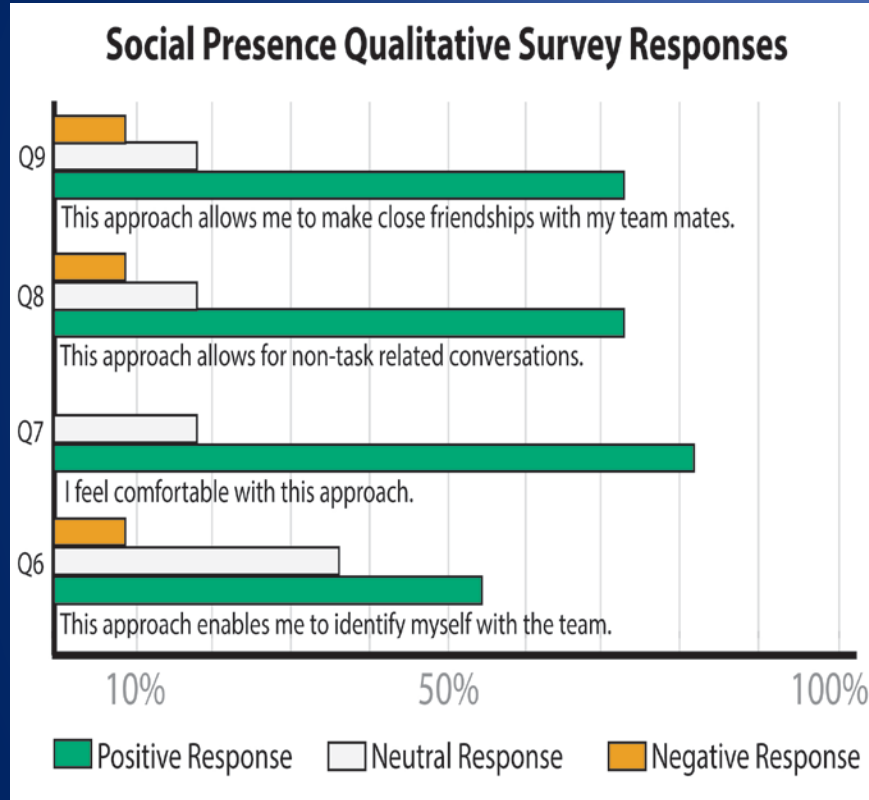


Was there something about this approach that made you feel isolated or less a part of the team?

Open Response Themes:

- Technical issues that cut off communication
- Interpersonal dynamics
- partners splitting up

Results: Survey, Question 2



Was there something that made this approach especially valuable in terms of team-building or social inclusion?

Open Response Themes:

- Sharing the process of exploration
- Collaboration during data collection/ site interpretation
- Understanding team member abilities and adapting accordingly



Results: Qualitative analysis of interviews

Negative influences on engagement:

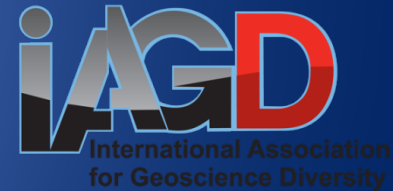
- Lack of communication between team members and between faculty and students
- Feeling academically underprepared/inferior

Positive influences on engagement:

- Feeling comfortable to be yourself without judgement
- Seeing accomplishments from group efforts in the field.
- Challenge & success – both physical and academic

Final Remarks

Engagement through remote collaboration is possible when learning experiences are designed with inclusion in mind.





Thanks for listening!

Questions?

**Please visit the IAGD booth in the Exhibition Hall for more info
on accessible geoscience projects!**

