ED027 Student Experiences with Remote Learning and Research I

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AGU Fall Meeting 2020
Part of the **AGU Education Section** conference session series

- ED020 Student Experiences with Remote Learning and Research II Posters

- International engagement (co-sponsored by Japan Geoscience Union)
- Working with students and early careers as partners (student conveners, chairs, presenters)
- Bringing research and education closer together
- Commitment to diversity, equity, and inclusion
ED027

• 4-min presentations
  - presenters from diverse roles and types of institutions
  - comments and questions in chat box

• Q&As
  - questions from the chairs

• Discussion
  - students’ + academics’ + institutional perspectives
  - international + cultural dimensions
COVID-19: Students’ Experiences with Virtual Learning

Planned vs. Pivoted Learning

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1) Overwhelmed students; 2) Consistent/weekly assignments; 3) Outside variables

• I had a hard time keeping up
• Some professors . .double the amount of work
• Quizzes helped me stay on schedule
• Week by week basis allowed us to stay engaged
• I was laid off of my job so worrying about finances was distracting
• Could not be with my family
Online established routines minimize disruption

• Practicum lab transition was not more difficult than lecture course

• On-campus courses with online established routines may result in smoother online emergency pivots

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ED027-02

Tanya Furman
Mark B. Moldwin
Breaking the taboos of STEM instruction: remote learning in the sudden pandemic

Tanya Furman and Mark Moldwin
COVID-19 changed the teaching relationship

- Shared new situation changed the “power structure”
- Faculty members became key conduits of information
- Faculty members became special counselors, advisors and mentors
- Insertion of technology raised challenges to human-ness
- Joys of interaction in class, lab, hallways were reduced for everyone
- Intrusion of family life affected everyone
- Mental health crisis affects faculty, students, staff
- Added emotional work = affective labor
We have opened the door to richer teaching

• Faculty play key role in student transition towards adulthood
• Talking about what matters really matters
• Recognition that content is not the only valued currency
  • Take time to acknowledge stresses
  • Take time to discuss feelings
  • Take time to wrestle with technology
• These actions take time but are appreciated deeply
• STEM faculty recognizing the nature of shared journey
What can we do?

• Connections

• Monthly teaching circles to support each other in teaching

• Teaching has always been lonely and not the topic of hallway discussion at Research Universities, so this regular opportunity enables support and a chance to learn and grow professionally

• Connect at and through AGU https://connect.agu.org/education

• Mark Moldwin (mmoldwin@umich.edu)

• Tanya Furman (furman@psu.edu)
ED027-03

Olivia Helinski
Anna Tinoco
Troy Membere
Jordyn Wolfand
Cara Poor
Remote Undergraduate Research: Pros, Cons, and Tips

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We want to share our experiences so that other students can feel confident in their ability to successfully conduct research in a remote format!
Pros and Cons of Remote Research

**Pros**
- Employment Opportunity
- Schedule Flexibility
- Individual Learning
- National Collaborations

**Cons**
- Limited Spontaneity
- Technology Problems
- Lack of Interaction
- Burnout & Lack of Change
• Consider meeting with your team **often** for **short** periods of time

• Save time by utilizing online resources - Mendeley

• Stick to a schedule – create one that best suits your learning style

• Take detailed notes & stay organized

• Work on a variety of tasks throughout the day
ED027-04

Takashi Oguchi
Hiroyuki Yamauchi
Yuichi S. Hayakawa
Toshikazu Seto
Providing Open Learning Materials to Study How to Use GIS

Oguchi, T., Yamauchi, H., Hayakawa, Y.S., Seto, T.
Univ. Tokyo / Hokkaido Univ., Japan

- GIS practices in schools and universities are important
- Giving GIS practice courses is harder than giving lectures on GIS
- If online educational materials to operate GIS freeware and open data are available free of charge, anybody can learn GIS operations without cost, and more safely under the pandemic
- We have constructed such open educational materials to learn GIS operations for Japanese students
- Feedback from students was useful to improve the materials
Upload materials

Our WG

GitHub

Pull requests for improvement

Building test

Travis CI

Test results

Google Analytics

Access log

Publish via GitBook

System Structure, Examples of Contents, and Example of Web pages

<table>
<thead>
<tr>
<th>Title</th>
<th>Main applications</th>
<th>QGIS, GRASS GIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spatial data conversion</td>
<td></td>
<td>QGIS</td>
</tr>
<tr>
<td>Spatial database</td>
<td>PostGIS, QGIS</td>
<td></td>
</tr>
<tr>
<td>Editing spatial data</td>
<td>QGIS</td>
<td></td>
</tr>
<tr>
<td>Basic spatial analysis</td>
<td>QGIS</td>
<td></td>
</tr>
<tr>
<td>Network analysis</td>
<td>GRASS GIS, QGIS</td>
<td></td>
</tr>
<tr>
<td>Region analysis</td>
<td>QGIS</td>
<td></td>
</tr>
<tr>
<td>Point data analysis</td>
<td>QGIS, CrimeStat</td>
<td></td>
</tr>
<tr>
<td>Raster data analysis</td>
<td>QGIS</td>
<td></td>
</tr>
<tr>
<td>Visual communication using maps</td>
<td>QGIS, GRASS GIS</td>
<td></td>
</tr>
</tbody>
</table>
Our online materials have been frequently used by various types of people, especially students with assignments.

Questionnaire surveys on student users led to material improvement.

Record of Monthly Access From ac.jp, go.jp, co.jp, or.jp, ne.jp, etc.
Geoscience Education Research on Diversity helps us understand COVID-19 impacts

- The oddly disparate outcomes of the current extraordinary situation with COVID-19 can be understood by a close examination of functional elements of student and faculty support.
- Understanding of diversity and how to support diverse students in the geosciences has evolved substantially in the last couple decades, accelerating in recent years.
- Many useful models for framing thinking and research about diversity have led to an understanding of factors affecting all students.
Research-based theories of interactions shaping student learning and success now exist in the geosciences. These can guide our investigations of causes and effects of disruptions and innovations in learning systems. The three shown here are examples of frameworks that can focus our thinking.

**Jolly’s Trilogy**

- **Engagement**
  - Having an orientation to the sciences and/or quantitative disciplines that include such qualities as awareness, interest, and motivation.

- **Capacity**
  - Possessing the acquired knowledge and skills needed to advance to increasingly rigorous content in the sciences and quantitative disciplines.

- **Continuity**
  - Institutional and programmatic opportunities, material resources and guidance that support advancement to increasingly rigorous content in the sciences and quantitative disciplines.

**Multicontext Theory**

- **Starts from a focus on worldview and culture and preferences/inclinations for interaction with educational systems, High Context (integrated) to Low Context (individuated) preferences.**

- **Conflict in context orientation for individuals and academic systems and culture makes inclusion difficult, especially in STEM fields, and is exacerbated by COVID-19 disruptions.**
Concluding Thoughts

- There are thousands of geoscience students currently in disarray and disruption. How do we assess and share success and understand difficulties? What lessons can we learn to make it better in the future?
- Compatible constructs, assessment measures, and theoretical frameworks are useful. These need to be well understood and communicated. Introspection into one’s local context is important.
- Many innovations and arrangements may become permanent even post-pandemic. It’s important to understand why and how some worked and some didn’t. There is opportunity and innovation in crisis.
- Diversity is multidimensional and greatly exceeds simple measures – an integrated understanding is key, and results from research on DEI help understand how to help us help students (and faculty) thrive.

Questions? Contact me emriggs@geos.tamu.edu
ED027-06

Wonsuh Song
Remote learning/teaching experience in Japanese Universities

Waseda University
Wonshuh SONG
Structure of Remote learning systems in Japan

Main system
(Moodle, TEAMS, Blackboard, Course Power, etc.)

- Live
  - zoom etc

- On demand
  - Stream or YouTube etc

Discussion
Q&A
Assignments / Quiz
Advantages of On-demand class in Japanese Universities

**Students**
- No need to commute
- No need to spend time for their outfit / makeup
- Can take classes at any time / Replay
- Multi-tasking without any notice

**Professors/lecturers**
- Spend less time to commute
- No need to worry about business trip or special occasion
- Chance to raise quality of the class
- No need to talk same thing twice
Disadvantages of On-demand class in Japanese Universities

**Students**
- Hard to be concentrated
- Hard to follow all the assignments
- Hard to ask questions
- Hard to make friends
- Depression, eye fatigue

**Professors/lecturers**
- Spend more time to deliver a class
- Hard to check student’s situation
- Hard to encourage students
- Hard to adapt new systems
- Hard to buy all devices for class
Q: Which type of online-blended class do you prefer in the next semester?

- Once in 3 classroom classes: 39 (58.2%)
- Online only in the first and final day: 3
- Online only on the first day: 2
- Online only: 23 (34.3%)

n=67
My teaching experiences:

2020 Spring semester

2020 Fall semester
Q&As

1. Planned versus Pivoted Distance Instruction: Lessons Learned from the COVID-19 Semester (Invited)
2. Breaking the Taboos of STEM Instruction: Remote Learning in the Sudden Pandemic (Invited)
3. Remote Undergraduate Engineering Research: Pros, Cons, and Tips
4. Providing Open Learning Materials to Study How to Use GIS (Invited)
5. Access and Success in Geoscience Education in the Age of COVID-19 (Invited)
Discussion

Student Experiences with Remote Learning and Research

• students’ + academics’ + institutional perspectives
• international + cultural dimensions