**March 10, 2025 Education Working Group Call**

Attendees: Antoinette Abeyta, Jody Peters, Diana Dalbotten, Jason McLachlan, Saeed Shafiei Sabet, Rachel Torres
Regrets: Mary Lofton

Agenda/Notes:

1. Celebrations!
    a. Code Review Blog Post is live! https://ecoforecast.org/resources-for-reviewing-code/
        i. Thank you to everyone who helped get it over the finish line!
        ii. Add it to Zenodo to have an archived version with DOI. Jody will work on this

    b. Congratulations Rachel and EFISECA!  EFI Introduction - Grad Student Virtual Panel and Beetle Forecasting Tutorial Workshops
        i. During Q&A grad students shared what was hard for them as they were learning forecasting. Here is a short set of notes about that
            1. Coding - how to support students with coding (positive is seeing the progress on coding). nice to know others have done it before
            2. Hardest part of learning to code is learning to code.  New terminology and new way of thinking. Initial effort to put in to learn it.  Then can branch out into whatever excites you (learn about trees, making cool graphs).
            3. Quote that Hannah shared: "You can teach computer scientists engineering or teach engineers how to code"
                a. Want people who know ecology well and coding is a second skill.
            4. If you compare yourself to others outside of big modeling and big skills/people who code for many years - you'll realize you are doing cool things and that you are good at it
            5. Notes from today's call:
                a. Barriers - presented in a way that is alienating, too mathy, too abstract
                b. It is a changing trajectory - if it is incorporated into everything you did then it will become more 2nd nature
                c. AI is also changing the trajectory.  There is a transition - to use AI, but not rely on it/expect it to be correct
                d. Jason wants the materials he teaches his students to be used still in 5 years

    e. Important ideas in coding don't rely on syntax (R, Python) so you can show it visually - similar to what Sean Dorr and Dan are doing with Indigenous groups

    f. Workshops and short courses - no matter the amount of time there is the feeling of even though we didn't get through the whole thing, now you have the pieces to do it on your own, but would be good think about a different format to really wrap it up. Have a few days working together, have a few days for students to work on their own, and then come back and iterate on what was learned. It is both learning the code, and working on your own to apply it, but you have to come back to get feedback

    g. Diana/Antoinette experience - have a series of lecturers around a centralized theme. Then students collectively design an experiment that grad student/Antoinette run (collect data, run experiment, make it available), then students evaluate the data and synthesize. One set of students published papers about the analyses

    h. Similar to a Woods Hole course - have intense week of class. Have real data students want to work with

    i. Done at grad level - but would be good to try at undergrad/K12 level. Work on a problem and translate it into a story map.

    j. https://nced.umn.edu/community/summer-institute-earth-surface-dynamics

   6. Felt it was a
    a. 8-10 people on the panel
    b. 50 people registered

2. JMc: Education proposal in prep
  a. Internal Notre Dame proposal to address poverty - due March 21.
  b. Make teams with focus on concrete that gets to cause of poverty and is actionable to address it.
  c. Would be something similar to Sloan project work
  d. Goal is to work on remote sensing and forecasting and Jason has contacts at Salish Kootenai College
  e. Innovative land management is key employer on Tribal land. Technology tools important in education. And link across institutions
  f. Want students to manipulate and analyze remote data to make decisions
  g. Think about jobs in Tribal government and remote sensing and consider putting the skills to focus on problems or decisions or creative management that Tribes want to do with forestry and hydrology
  h. Tribes have knowledge.  Don't want to say there is a poverty of knowledge but a poverty of tools. Frame it in the amazing things going on with Native land management

        i.   Let Tribal managers tell the story they want to tell

        j.   Data sovereignty and ownership over decision making

        k.   Tribes collaborate with CPH to apply for grants and they are successful because of their partnership

        l.   Core objective of why people want to keep people poor - if you don't have the capacity to think outside of what they are doing. But if you can take a burden off to allow someone more capacity then they can come up with new things

3. EFI2025 Conference;  https://bit.ly/efi2025
    a. Early bird registration closes on March 14!
    b. Compilation of notes from previous Education/DEI working groups EFI University for Everyone
    c. Preparing for the EFI University for Everyone working group
        i. User stories could be a way to identify barriers/gaps/needs early on in the working group.
            1. This is an activity Jody did recently in a course for community managers on creating communication materials. The course was from the Center for Scientific Collaboration and Community Engagement (https://www.cscce.org/))
        ii. Original User Story Framework
            1. As a [member type]
            2. I want to [name an activity that would address their motivating scenario]
            3. So that I can [their objective] and [subtext]
            4. But what is holding me back is [name barriers]
                a. **What is something I need to accomplish** - use this instead of "what is holding me back"
        iii. Example User Story
            1. As a student
            2. I want to learn data science skills
            3. So that I can get a job that pays well
            4. But what is holding me back is the lack of data science courses at my institution
        iv. Updated User Story Framework based on discussion from the call
            1. As a [member type: student]
            2. I want to [name an activity that would address students' motivating scenario]
            3. So that I can [the students' objective] and [subtext]
            4. What I need to accomplish is [name accomplishments needed to achieve the objective]

    d. What next?  How to prepare for the conference? Big Ideas

    **i.** Half day
1. Introductions, Big picture, Brainstorming ideas, Breakout groups, Synthesis and Next steps

    **ii.** Set the stage - what do we want people to take away from the working group?
1. If it is just our typical group that will be meeting, this may be different than if it is broader group with people we haven't worked with before
2. See who ranks the workshop high in the registration and ask people to bring materials/examples

    **iii.** Focus on what we are doing right and take what we have to consider how to make it more accessible
1. Provide curated list of what resources we currently have available - start with Education resources on EFI website and update (add Rachel's data science and beetles tutorials)
2. Add https://www.indigenouslandstewards.org/ from David Dominique Chavez to the list of resources

    **iv.** What parts of a University are important to allow students to participate in ways that works for them (think outside curriculum - admin, student life, location, etc)**.**
1. Consider multiple ways for students to participate
2. What are the specific skills students need
3. What do students need to feel a sense of belonging
  a. How to normalize open ended questions so students know that these are good and there is no penalty for being wrong

    v. Design Justice Principles and Universal Design Principles - could be 1-2 slides from the EFI2024 Conference, example of how to consider 1 DJP principle, and example of power dynamics slide (Jason needs to confirm that Sean is okay with sharing this)

    vi. Create guides on how to start - how to introduce this new topic into your curriculum (National Association of Geoscientists has good examples we could follow)

    vii. Go through examples of activities and consider how to make them more accessible. Think-pair-share that levels up

    viii. Consider how to use the JEDI database analyses that Dave is leading to define and measure data-driven success of EFI University at the individual level (undergrad/grad tracking form), cohort level success (composition of working groups, leadership, active members), community level success (EFI compared to NCSES demographic stats)

 e. Next steps
   i. take all these pieces and now just need to order them.
   ii. For outcomes - need to determine what our goals are for the output
   iii. Map out the next steps that target developing the structure

       iv.     Order what is listed above and point to something that we want to
       v.     Rachel will look through this and make notes and pointers
       vi.    What do we mean by data

## f. EFI University for Everyone

g. **Short Description:** Participants in this working group will collaboratively redefine and reimagine what a curriculum in ecological forecasting might look like, including the different components of data science, ecology, and community based efforts to create a resource that can be shared with the EFI community.

h. **Additional Details:** When we talk about 'bottlenecks' in training students for careers in ecological forecasting we are often focusing on the negatives, the reasons why such inequities exist in education or the persistent achievement gaps for underrepresented students. This can include anything from not having enough relevant educational content for culturally diverse students, lack of access to stable internet or technology, geographical isolations and less involvement in social scientific communities, or fewer offerings of quantitative courses at Minority Serving Institutions.

Rather than centering our discussions on a deficit mindset, focusing on what is lacking, we are proposing to create a resource to uplift existing programs and success stories from our partnering MSIs to envision what an inclusive and equitable education in ecological forecasting would look like. Our goal is to envision: if we were to create an EFI university, what would the curriculum look like? Who are the students we invite to participate? What resources would be needed? In this project we want to redefine and reimagine what a curriculum in ecological forecasting might look like, including the different components of data science, ecology, and community based efforts. We will draw from frameworks including Design Justice Principles and Universal Design for Learning. This EFI University would aim to be accessible, inclusive, and equitable to everyone.

The working group will include brief intros and flashtalks to set the context of where we are currently, followed by small group discussions to share ideas and resources. We aim to produce a framework for inclusive curriculum, including existing resources and materials, that will support cross-institutional collaborations to implement the curriculum and will lay the groundwork for grants to support growing and implementing activities.

1. ***Follow up on this task as we have time to do so - not necessarily on this call:***
Developing scaffolding material to help people in the EFI community know what code is available in the [EFI GitHub repo](#)

        a. Project  - can add a description that is more useful for the EFI project
        b. Not sure if there is an overall ReadMe
        c. Could make repo that is a guide to resources
        d. It is possible to do a collection of code repos in Zenodo - could do one bin in Zenodo to see all the code that is published from EFI.
              i. Community in Zenodo
              ii. Provide benchmarks of the code
        e. GitHub repository option
              i. https://docs.github.com/en/organizations/collaborating-with-groups-in-organizations/customizing-your-organizations-profile

Other resources
    2. Padlet with list of the working group activities the group had been thinking about in 2023. Jody still needs to update it to add what has been done.  She has updated to add some color coding for activities in progress and those that have been worked on.
              i. https://padlet.com/jmurray716/brainstorming-efi-education-wg-activities-p78o4h18zdk397nk