H.J. Andrews Forest Discovery Trail: A programming and research journey

Presentation to LTER Education Committee Notes – April 4, 2018

**Introduction**

* Sarah Kelly, Graduate student at Oregon State University, M.A. in Environmental Arts & Humanities
* Process oriented presentation showing the changes made over the years, formation of the Discovery Trail program

**Discovery Trail Background**

* Started with development of physical trail in 2011 (approx. 1 mile)
* Trail is a small representation of Andrews ecosystem for visitors, a ten-minute walk from headquarters
* Instrumentation needed for microclimate research, variable dry streambed, phenology research; the trail was wired for internet to send data
* Parties involved: worked together to conceptualize the research and curriculum along with input from local teachers…
  + Lissy Goralnik, PhD: Lead for Discovery Trail conceptualization, Postdoctoral researcher at time of trail conception, Current Assistant Professor of Community Sustainability at Michigan State University (developed arts/humanities part of curriculum, lead on research design)
  + Kari O’Connell, PhD, LTER Education Coordinator, (Involved in all parts of the project, research design, curriculum development, trip planning, budgeting, etc.)
  + Mark Schulze, PhD, Forest Director for the H.J. Andrews, (Developed ecology part of curriculum, assisted with logistics and other components of project)
  + Michael Nelson, PhD: environmental philosopher, dissertation advisor for Lissy Goralnik and Sarah Kelly, Lead PI for Andrews LTER grant (Informed parts of research design, theoretical and humanities components)
  + Sarah Kelly, Graduate student, leading field trips, data management, curriculum changes after pilot year, data management and analysis
* The Discovery Trail Interpretive Experience
  + Is a mixed discipline curriculum combining arts, humanities and ecological science currently targeting only middle and high school student groups
  + Embraces the diverse ways we can know, understand and appreciate place
  + Consists of ten stops total with the curriculum delivered via ten iPads, one group of 2 to 3 students per iPad (iPads also enable data collection); with ten iPads total, we can accommodate 30 students at a time
  + Research and learning theories informing the project – [Lissy Goralnik research](https://www.researchgate.net/profile/Lissy_Goralnik), experiential learning theory, place-based education
  + Initial goals:
    - create a sense of place for students
    - inspire empathy and care for non-human individuals and ecosystems
    - students engage in place-based scientific inquiry through observational activities at each stop, engage in creative material via Andrews based poetry, prose and native American storytelling, reflect on personal values and experiences
    - Use iPads so that we can deliver curriculum, enable data collection and have teachers leading the field trips on their own
  + Pilot data collection: questions on iPads, post trail written survey, teacher interviews
  + We offer and encourage teachers to incorporate pre and post activities (from Project Wild and Project Learning Tree) in their classrooms before and after the experience
  + Recruit teachers from schools about an hour to two hours from the Andrews
  + Preference for teachers who have already been to the Andrews, engaged in Andrews teacher development on site

**From then to now: Field trips**

* Summer 2016
  + First Pilot, with curriculum developed in PowerPoint and printed worksheets for students (iPad program still in development)
  + 1 field trip, Sisters HS, 29 students
* Spring 2017
  + Discovery Trail curriculum for all ten stops now accessible on iPads
  + 3 field trips, mix of HS and MS, 46 students
* What we found after the first year pilot
  + the stops take a lot longer than expected averaging about ~20 minutes for stops
  + students wanted more time to just “be” in nature
  + we directed students to stops randomly – originally the trail was developed to be completed chronologically but logistically we can’t fit multiple groups at one stop
  + Still needed to work out technical glitches
* How I responded to this feedback:
  + Refined goals of the discovery trail: increase appreciation for science, enhance observational skills and curiosity, compare places (home to Andrews), offer hands-on sensory experience, adhere to NGSS concepts (patterns, systems, stability and change, cause and effect), engage in creative reflection and scientific inquiry, cultivate respect and wonder
  + Refined learning objectives for each stop
  + Improved trail logistics, added stop groupings so that each student group visiting different stops had comparable experiences (that meet all of the goals of the trail experience)
  + Develop and add pre and post questions on the iPad
  + Develop post trail reflection activity; Refine post trail survey (added likert scale – modified some questions)
  + Added silent sensory walk before Discovery Trail based on student feedback
* Example of the experience now (Fall 2017 season)
* Arrive to Andrews – introduction to place from Forest director
* Confirm research forms for students and separate them based on hard hat color
* Read poetry or prose to group from the Hidden Forest or Forest Under Story
* Silent Sensory walk – students enter trail next to headquarters and walk through trail silently engaging with sounds, smells, textures, and sights of the forest (without technology)
* Reflect on silent sensory walk at kiosk, next to the discovery trail entrance, What did you see, smell, hear? How did it feel to walk in the forest?
* Give instructions on program, iPads at the Kiosk (including how to respond to technical glitches)
* Complete Pre “stop” together at kiosk; test technology and collect data from students
* Visit three stops on the Discovery Trail (based on iPad grouping)
* Complete post “stop” on the trail
* Return to pavilion area, eat lunch
* Complete reflection activity about the highlights of the day as a group
* Fill out final written survey about trail experience
* Return to school
* Follow up with teacher/interview 2-6 weeks later
* Feedback: We had almost no glitches during the final Fall 2017 season! We discovered that most of the issues were fixed by clearing the cache and updating all software on iPads before the trip. We still have some connectivity problems with Wi-Fi but hardware is being updated. Another issue is getting all IRB forms from students, some only bring one of the two required forms (parental consent and student assent)

**Research & Evaluation**

* Research question: How does the mixed discipline Discovery Trail Interpretive Experience impact student understanding and care about place?
* Research methodology and methods: Ecophenomenology methodology; Conventional content analysis method, emergent coding
* My project includes a creative non-fiction essay about my experience with the students on the trail and a research paper using the data collected from Fall 2017 students, interpreting their experience on the trail. We are particularly focused on their expressions and manifestations of care about self, non-self and place. We are currently only assessing the affective factors.
* Look out for research papers to be completed and published soon!