Summative Comments: OUTSIDE
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Project Goals

While the external evaluation originally proposed was ambitious in scope and comprehensive in design, as a result of reduced overall funding to an exploratory level (Pathways) project, the evaluation was shifted to an advisory role with periodic site visits and formative reporting to the team. Still, we are able to weigh in on project achievement and accomplishments from an external perspective.

As reflected in the inventory of major activities, OUTSIDE accomplished a lot, in many ways more than originally proposed, and on much reduced resources. The GO app was developed to a very functional level (alpha) and was used by students from the first year onward. The app significantly engaged the students in the science content of their outdoor hike experiences and provided a structure and backdrop for understanding the environments and biological contexts. Further, through notebook and discussion activities related to the app, their knowledge was questioned and solidified. Students engaged in active learning (taking pictures, noting details) which led to additional questions and wanting to return to the site for additional experiences (an uptick one would want to see in an informal science education project). For the majority of the students, it was the first time in such nature experiences and they left with positive dispositions about nature and the science of nature.

The app provided a foundational platform upon which to build the next generation of technology-to-nature learning environments and afforded researchers with usability, access, modality switching usage (e.g. digital-to-physical-to-nature-to-digital) data that is scarce in the literature and valuable for future efforts. It allowed students to interact with nature, capture data to be later used by researchers, and was a real-time resource that ideally will become a flexible tool in which any nature environment and related data packets (local flora and fauna informational resources) can be uploaded for use at different sites and regions.

Numbers of volunteers, students, teachers, hikes, outreach efforts, and dissemination activities (publications/presentations) were met or exceeded, including six hikes with different cohorts or middle school students (four were originally promised), eight national conference presentations, five talks, and several publications ranging from a journal article to theses to manuscripts in review.

Project Research

OUTSIDE researchers measured student experiences and learning on multiple planes and reported on gains per semester. Findings on usage across different planes (nature, social, technology) shed light on this kind of research, also new in its design, to explore not only what content students attain, but how their interactions with the technology (either with or without nature) might provide new models for the outdoor learning context.

Analyses of the interactions showed positive but inconclusive data on different fronts. For example, students uniformly enjoyed using the technology and were very engaged, but interacted in different ways (most use was with the camera, least use was with note-taking). Content gains in flora knowledge showed significant gains each semester, but environmental awareness did not. Classroom teachers did not provide follow-up in the classroom to ascertain longer-range traction

or connection to in-school learning activities (this was neither proposed nor expected of the project, only to point out that connections between the OST and in-school model might present valuable information on impact to students.

A collection of data collection tools, instruments, and protocols were developed and piloted which will be useful for others to borrow and adapt; this will be a considerable contribution to others conducting similar work, particularly the protocol for understanding interactions with technology resources in nature.

Dissemination

In addition to the multiple papers and presentations reported, the team offered multiple PD workshops for University volunteers to become naturalists, which developed a sustainable training program at the University. As of this date, the lead naturalist from OUTSIDE was hired by USM to continue his work in recruiting for this training model; he has since (post-project, through the program) hosted 5000 visitors with nearly half being from the 5-6 grade levels of the OUTSIDE project, all using trained volunteers and many of the components designed by the project. Additionally a group of students at Loyola University in New Orleans (co-PI Thomas) has been trained to lead local hikes and biological learning activities with middle schoolers using the GO app; this is a testament to the program's viability of continuation and importance to host institutions; something that will prove valuable to the next cycle of development of OUTSIDE.

Overall, the project exceeded expectations, in development of the app, numbers of participants and activities; it provided research on areas of science learning that have not yet been fully explored: how participants interact with technology in the field to better inform their learning experiences, and provided a range of data collection tools and protocols to help others further inform the field. The project also developed a model that is easily replicable elsewhere for others to help students experience nature with specific scientific learning goals. With a highly developed proposal submitted for next-phase development and research, the team hopes to move the field forward based on the technologies, findings, and foundations established by this Pathways project.