

Executive Summary: *Unseen Oceans* Public Programs Evaluation

In 2018, the American Museum of Natural History opened a new temporary exhibition, *Unseen Oceans*. This exhibition sought to spark excitement about ocean exploration, spotlight the work of scientists, demonstrate the diversity of habitats within a vast ocean, and highlight the impact of human activities. AMNH also offered a variety of related public programs for adults and youth, including a five-week adult course, a five-day youth course, a SciCafe session, and a pop-up VR experience in the Hall of Ocean Life. Evaluation sought to answer three questions, in short: 1) To what extent do participants learn programs' main ideas? 2) Which ideas are most meaningful or "sticky" for participants? 3) How do visitors respond to the pop-up VR experience? Does it drive traffic or interest to the *Unseen Oceans* exhibition.

The accompanying report presents complete results from an evaluation conducted by J. Sickler Consulting. The study used several methods and triangulated the results to draw larger conclusions. The study used interviews with visitors immediate after the pop-up VR experience (n=34), pre/post personal meaning maps and survey assessments in the adult course (n=18 paired), exit surveys of SciCafe attendees (n=75), and embedded activities in the youth course. This summary highlights the study's cross-cutting conclusions.

Across three types of public programs – adult course, youth course, and SciCafe – there seemed to be clear evidence of learning gains for attendees.

Adult participants in the five-week adult course and the one-night SciCafe both reported they felt like they increased their level of familiarity or knowledge about the core topic(s) of their program. In addition, several different measures used for each program showed specific topics and concepts where they demonstrated actual gains (adult course) or could name something new they felt they took away (SciCafe). For the SciCafe, new learning was mostly related to the microbes that were the focus of the session.

Within the youth course, there was evidence that youth improved the accuracy and complexity of their understanding of the program's core concept of science visualizations. The majority of students were better able to define that term after the first day's activities than they could at the start of the course, and the quality improved dramatically in students' selection and explanation of examples of science visualization from within the *Unseen Oceans* exhibition.

The ideas that were most strongly conveyed in the adult course tended to be tightly tied to the variety of content topics that were presented in the individual sessions.

The data from the adult course showed that learning aligned with the course syllabus. In particular, meaning maps showed that the course seemed to prompt new learning about evolution of cetaceans, fluorescence in ocean creatures, data visualization, and the tools and technologies of ocean research. While these ideas were not necessarily connected to one another, they each referenced sessions in the program (including topics from the first weeks that were particularly "sticky" for participants).

The data also indicated that the course may have shifted the focus of participants' perceptions of the ocean toward thinking of it as unexplored and mysterious, with less immediate emphasis on affective reactions, such as its beauty. There were also several lines of evidence that indicated attendees entered with robust knowledge about certain topics – particularly about human impacts on oceans through climate change and debris pollution.

Compared with the in-exhibit film, visitors had similarly positive responses to the pop-up VR 360 experience, but different experiences from a learning perspective.

Although visitors enjoyed both modes of viewing the “Encountering Giants” film from Unseen Oceans, the VR 360 experience to be experienced as a more physical and emotional experience, while the in-exhibit film was a little more tied to a cognitive experience. For one thing, the VR experience more often triggered people to report feeling awestruck and immersed in the environment than the film had. In contrast, the in-exhibit film tended to prompt more people to describe more cognitive feelings – of being interested in the content.

In this same vein, people tended to see slightly more content connections in the in-exhibit film, seeing it more as an opportunity to show qualities of animals; while the VR 360 presentation was viewed more as having the purpose of immersing you. The experience rarely even prompted more questions among visitors, although those that did wanted more information about the animals in the film.

The VR 360 experience in Hall of Ocean Life was well-used and enjoyed by visitors, but it seemed generally unsuccessful at driving awareness of or traffic to *Unseen Oceans*.

The VR 360 experience was thoroughly used by groups who stopped at the station; about 90% or more of all adults and of all children in the groups interviewed had tried the experience. People responded very positively to the film’s immersive quality, particularly seeing the animals so close and having the feeling of “really being there.”

The experience did not seem to achieve its goal of driving traffic to the Unseen Oceans exhibition. Most people who had engaged with the pop-up experience were unaware that it was connected to the special exhibition. However, when the interviewer made them aware of the connection, most were intrigued enough to say they felt they would be interested in seeing it. The data were collected after AMNH staff began making an extra effort to mention the special exhibition to visitors; it seemed that, with everything going on at the station, it was difficult for people to retain the message.

Implications & Next Steps

Based on the findings and consideration of results with the AMNH team, several insights were gleaned to inform future directions.

- **Consider other ways of communicating exhibit connections for experiences like the VR pop-up.** Verbal information from staff seemed not to be retained by visitors enough to connect the pop-up with the special exhibition, but it was successful when they were focused on the interviewer’s questions after the experience. It could be worth experimenting with other modes of communication that happen after the busy activity of managing equipment at a VR station.
- **Something like a printed flyer or leaflet might be worth trying for attendance-driving and content purposes.** Printed material, while having downsides, could be useful as a way of supporting two limitations of the VR pop-up. It could directly share information about exploring the content in a special exhibition (and where to get tickets), as well as providing some supporting content for an experience that, on its own, connected more with affective experience than cognitive.
- **Courses may be strengthened by better articulating overarching themes or “big ideas” across sessions.** While data showed the adult course was successful at prompting visitor learning, there was less evidence of a single, overarching message. Having an even clearer through-line across topics and presenters may bring even further coherence to support student learning.
- **The modified PMM method may not be an ideal tool for future evaluations unless it can be paired with an interview.** Some useful evidence of student learning was obtained from the modified PMM, but it was somewhat limited in how deeply participants explained their understanding when self-completed maps. They were effective at capturing the basic topics and concepts that arose in people’s minds, but were not as strong examples of depth of understanding without individual abilities to ask probing questions.

