Information Technology and Environmental Social Justice

CST 462S: Race, Gender, and Class in The Digital World

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Service Organization and Description

MEarth is an environmental sustainability education program in Carmel Valley, CA that promotes youth and adults to better care for themselves, the community, and the environment (MEarth, n.d.). The community they directly serve are the students at Carmel Middle School, as these students attend MEarth science and culinary classes during their regular school hours. They additionally serve students at schools in Monterey County, and local youth and adults through field trips and special events. During my service as a student designer, I worked in the MEarth office with the full and part-time staff, and most closely with Community Stewardship Manager, Jennifer Phillips. I was able to complete 4 hours of service, which included an orientation and tour of the MEarth habitat, locating promotional event signage, creating chalkboard signage for a plant sale, and updating promotional signage and merchandise inventory to a spreadsheet.

Literature Review and Research Questions

With my experience serving at MEarth, I was able to observe that while their classroom programs were enriching, there was little to no information technology being utilized. From this observation, I questioned whether or not bringing information technology into environmental sustainability education would increase youth's understanding of the topic in the digital age. The 2017 National Education Technology Plan (NETP) discusses that technology in learning will increase engagement and relevance with students and tackle real-world challenges (U.S. Department of Education, 2017). Currently, MEarth solves the need of increasing education in STEM through hands-on culinary and science programs on the Hilton Bialek Habitat, but it is

possible higher learning and engagement could be achieved with implementation of information technology.

However, implementing such technology may create a socioeconomic divide, as it is possible not every student will have access to a computer or internet. Currently, Carmel Unified School District (CUSD) implemented an Educational Technology Plan that allows students in the district to obtain access to a Chromebook, learn technical skills, and comply with a digital citizenship agreement (Carmel Unified School District, n.d.). This removes the barrier for students that lie within this school district, including on-site Carmel Middle School. However, in 2017, MEarth's youth programs reached 1,585 individuals, 17.6% of which were from Salinas, and 14% from Seaside, the highest percentages following Carmel at 29.3% (MEarth, n.d.). These cities hold lower socioeconomic levels, with median household income at approximately $59,000 (Salinas) and $61,000 (Seaside), with Carmel-by-the-Sea at approximately $91,000 (U.S. Census Bureau, 2018). This social and economic divide in regards to technology accessibility will be examined during further research.

From the insights gathered on how technology can improve engagement, needs MEarth is currently fulfilling, and the concern over accessible technology, the following questions will be utilized to guide further research:

1. Would implementation of information technology at MEarth further engage youth on topics of environmental sustainability and encourage action towards social change?
2. Is there a digital divide that would prevent some students from learning with information technology inside and outside of MEarth programs?

Research Design and Procedure

To further investigate these research questions, 4 MEarth staff members were surveyed. The participants surveyed were:

- Benjamin Eichorn, Executive Director
- Jennifer Phillips, Community Stewardship Manager
- Leigh Eck, Program Director
- Tiffany Chung, Stewardship Educator

Participants were approached through email, and were asked to complete an online survey through Google Forms studying the relationship between technology and MEarth. The survey consisted of 10 questions, listed below, with an 11th optional question to leave any further comments or questions the participants might have. 9 out of the 10 questions listed were short-answer questions to retrieve qualitative data, and 1 out of the 10 questions provided the option of yes, no, or other, and is marked.

1. What is your name (first and last) and title or position at MEarth?
2. How does MEarth currently use technology (e.g. phones, tablets, computers, etc.) within the staff and volunteers?
3. How does MEarth currently use technology (e.g. phones, tablets, computers, etc.) within students and visitors of MEarth programs?
4. In your opinion, what is the most impactful MEarth program and why? (This could be most engaging, most memorable, most transformative, etc.)
5. In what ways do you think technology (e.g. phones, tablets, computers, etc.) could be further implemented among MEarth staff and/or student visitor programs?

6. In your opinion, do you think further implementation of technology would be beneficial to the MEarth programs? Why or why not?
7. If technology was further implemented, would MEarth be able to provide this technology (e.g. phones, tablets, computers, etc.) to all staff, students, and/or visitors using it for the intended purpose? *Answer choices provided were yes, no, or other.*
8. Do you have any concerns over further implementation of technology? If so, what? Are there any limitations that prevent further implementation of technology?
9. What do you believe to be the top goals for MEarth's programs and services to improve over the next year?
10. What do you believe to be the top goals for your position at MEarth to improve over the next year?

Findings and Discussion

Following participant's completion of the online survey, the responses were synthesized to address the two primary research questions proposed. The following statements are the main findings that were gathered from the results, and will be further elaborated on:

- All participants stated that MEarth does not use any technology in their programs for students and visitors, except for a few educational videos shown to students. However, with COVID-19 incurring a shelter-in-place, they have begun to create online content in lieu of their physical programs/services, which is a first for them to do so.
- 2 participants did not think further implementation of technology at MEarth would be beneficial to their programs. 1 participant felt that it would be beneficial, especially

because of the COVID-19 shelter-in-place causing their physical site to be closed. 1 participant felt that it would depend on the type of technology being implemented.

- 2 participants answered that MEarth would not be able to provide technology for students and visitors to use for its intended purpose if further implemented at the organization. 1 participant answered that they would be able to, but only through adequate grant funding. 1 participant answered that they weren't sure if it was relevant.

The findings revealed that while MEarth does not currently use technology for their programs at their physical site, the impacts of COVID-19 have put the organization in a position to utilize technology to offer resources for their users. However, in the position of being able to hold normal on-site activities, two participants felt that technology would not be beneficial to use for their programs, as MEarth values hands-on work together in the natural environment, while another felt it would depend on the type of technology. From the participant that felt technology could be beneficial, it was expressed that the way for this to be done is through online content while in-person activities are not possible, as well as social media engagement to maintain interest of current users and attract new ones. While the majority of MEarth staff members believed that technology would not be as beneficial compared to their hands-on programs at their habitat, it holds the potential to attract current and new users to come experience this type of learning in person.

In regards to the possible digital divide that could incur should any technology be further implemented at MEarth, the findings showed that the organization would likely not be able to support students and visitors. 2 MEarth staff members responded that they would not be able to provide technology such as phones, tablets, and computers to students and visitors at MEarth to

be used for its intended purpose. One participant stated that they would be able to if there was adequate grant funding, as MEarth is a non-profit organization. However, another participant responded that they weren't sure if supplying technology would be relevant. This raised an interesting point that a digital divide is far less likely to occur if MEarth does not implement technology into their programs, and their hands-on activities may relieve the digital divide.

Conclusion

In conclusion, the findings imply that technology may not further engage youth on topics of environmental sustainability. According to their staff members, MEarth prides themselves in experience-based learning that connects students and visitors with each other and the environment. However, the findings also implied that there may be some aspects of technology that can encourage their audience to come and experience their programs. This consists of more frequently managing social media channels to engage with current and potential users and advertise MEarth events and programs effectively to them. However, the organization has begun creating online content to supplement the cancellations of in-person activities due to COVID-19. I recommend for MEarth staff members to measure the effectiveness of their online activities, and determine whether that would change some the participants' perspective on further technology implementation once the shelter-in-place has ceased.

Additionally, the findings imply that if there was further technology usage to be implemented at MEarth, there is a potential for a digital divide to occur. MEarth staff members responded that they would not be able to provide students and visitors with such technology, with one stating that they would need adequate grant funding to do so. This may leave students and visitors responsible to provide their own technology to engage in additional activities, thus

creating a digital divide for those who cannot provide their own. However, one research participant raised a valid point in their response by stating they were unsure if the proposition was relevant at all. This proposed the idea that MEarth is already reducing the digital divide by emphasizing hands-on and in-person learning in their programs, meaning any student or visitor of any socioeconomic background has equal opportunities to engage and participate at the organization. This finding implies that implementing technology may create a digital divide at MEarth that does not currently exist. However, if MEarth staff members find through their recommended research that further technology implementation would be valuable, it is recommended that MEarth propose a request for adequate grant funding to support this implementation.

Final Reflection

During this course, I was introduced to concepts I had not previously been familiar with, such as the digital divide and gentrification. I am fortunate to be in a position of privilege with access to reliable internet and technology, as well as a middle class home my mother provides for my family. While I was aware that not everyone is fortunate to have these luxuries, I did not know the correct terminology of concepts surrounding social justice in the digital world, nor did I have enough information to make educated opinions on the issues. Now, I am able to clearly observe the social injustices occurring in our daily lives and articulate thoughtful responses to them. Taking this knowledge to MEarth, I was able to identify how the organization makes conscious decisions to provide equal learning opportunities for all students and visitors within their programs. Although the service hours were suspended, the short time I spent at MEarth I was able to witness a unique learning program for youth of all socioeconomic backgrounds, and

would have taken the knowledge from this course to create collateral designs that were accessible to their diverse audience for their Earth Day event. While I may no longer have the opportunity to produce these designs for MEarth, it is certainly knowledge that I will carry with me during my studies in web design. I look forward to future opportunities to incorporate my broadened knowledge of social justice in the digital world to craft online experiences that will be accessible for all users, and finding a way to address the digital divide through them.

References

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