Assessing accessibility in environmental education with an emphasis on the d/Deaf and hard of hearing community.

by

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B.S.A, University of Kansas State, 2022

A THESIS

submitted in partial fulfillment of the requirements for the degree

MASTER OF SCIENCE

Department of Horticulture and Natural Resources

College of Agriculture

KANSAS STATE UNIVERSITY

Manhattan, Kansas

2025

Approved by:

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Abstract

Accessibility is a topic that has been explored more often in the last decade. Still, levels of accessibility and how to increase accessibility have been studied less within the scope of environmental education (EE). Accessibility can be defined differently when considering EE and nature-based experiences. The first is in the sense that it can be accessed (location, safety, necessary amenities, etc.), and the other defining factor focuses on whether the activity is barrier-free for participants (physical disabilities, mental disabilities, monetarily, socially, etc.). This study will focus on two projects that assess accessibility within the field of EE.

The first project utilizes data from a mixed-method EE provider survey that the Plains Environmental Education Partnership completed in 2023 (n=301). The selected data from this survey include aspects of accessibility, including justice, equity, diversity, and inclusion (JEDI) initiatives, black Indigenous or a person of color (BIPOC) staff, disability accommodations, and diverse audience participation. General results from this project show that steps are being taken towards a more accessible EE. However, identified gaps within EE highlighted support for the need for initiatives to make EE genuinely accessible for all.

The second project assesses if EE is accessible to individuals who are d/Deaf or hard of hearing (DHH). This was done using a qualitative online survey with aspects that shape accessibility in EE. Aspects inquired about include perceived barriers and belongingness within EE experiences. From this study, we receive insight into the Deaf or HH view of the world of EE. From our participants (n=1), they concluded that there are multiple barriers, and they have a low sense of belongingness. Due to these barriers and a low sense of belongingness, the respondent is less likely to interact with EE programs and activities.

Overall, this collective thesis aims to expand the current understanding of accessibility within EE and how this information can be applied to future ventures to ensure the future of EE is more accessible.

Commonly Used Acronyms

EE- environmental education

JEDI- justice equity diversity and inclusion

BIPOC- Black Indigenous or person of color

PEEPs- Plains Environmental Education Partnership

SEEA- Southeastern Environmental Education Alliance

DHH- d/Deaf and hard of hearing

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Acknowledgments

First, I would like to thank my committee, which has helped me through this process: Dr. Sarah Jackson, Dr. Nellie Hill-Sullins, Dr. Anne Thomas, and Dr. Laura Downey. This project could not have happened without their input and guidance.

I want to thank everyone in the Applied Park Science Lab at Kansas State University. Specifically, I would like to thank Dr. Sarah Jackson, Dr. Cait Henry, and Russell Hicks, Ph.D. Candidate. These three have helped me understand how to navigate graduate school and maximize my time as a graduate research assistant.

I want to thank my family: Linda, Tom, and Jarred Wolken, and Sammie Goetting-Wolken. Lastly, I would like to thank all my friends Lance Cooper, Logan Doering, Kayla Masisak, and Jake and Alex Welch. I couldn't have done all that I have done without their support!

Chapter 1- Introduction

Environmental Education (EE) is a process of imparting knowledge and awareness about the environment and its associated challenges, developing skills and expertise to address these challenges (Dale et al., 2020; NAAEE, n.d.-b). To foster positive attitudes and motivations to make informed decisions and take action to solve these challenges. EE programs designed for youth also seek to enhance place connection, improve positive youth and adult development, and meet educational standards (Dale et al., 2020). EE can occur as personal (programs, activities, and interactions with staff) and non-personal (signs, brochures, webpages, etc.). EE can occur formally and informally; both are just as essential/viable types of EE. Formal education is usually hierarchically structured with graded or learning-based goals to learn about EE through specialized programs for technical and professional training. Formal education primarily happens within schools and scheduled EE programs/activities at nature centers, parks, and other nature-based locations (NAAEE, 2022). Informal education refers to unstructured learning and does not usually occur in classrooms. Informal learning can happen through conversations, activities, and self-studying. This type of education is not location-specific so informal education can happen anywhere (NAAEE, 2022). Each type of learning has its strengths and weaknesses, but it is important to note that each is equally important in the field of EE (NAAEE, 2022).

When in the planning stages of creating an EE program/activity, it must be accessible to all possible participants (Project Learning Tree, 2018). Accessibility in this study will be defined in two different ways when considering EE and nature-based experiences, with the understanding that these can intersect. The first is in the sense that it can be accessed (location, safety, necessary amenities, etc.), and the other definition focuses on whether the activity is barrier-free (physical disabilities, mental disabilities, monetarily, socially, culturally, etc.) (Ham,

1992). Key accessibility topics in EE include justice, equity, diversity, and inclusion (JEDI), providing accommodations to diverse populations, and ensuring that diverse populations are included when marketing EE.

An integral topic related to accessibility, which is increasing but has not grown enough in the field of EE, involves JEDI initiatives (Hougham, 2024). More research is being conducted to improve the prevalence of JEDI initiatives, which are critical to increasing accessibility (Hougham, 2024; Romero et al., 2019, 2019; C. A. Waters, 2022). Unfortunately, the exclusion of black, indigenous, and other people of color (BIPOC) perspectives and engagement concerning EE has occurred and continues to persist (C. A. Waters, 2022). Sadly, when EE was being developed, it was primarily by white individuals, which led to a lack of diversity in the development of EE (Romero et al., 2019). The North American Association of Environmental Education (NAAEE) is one resource that is working to continuously diminish exclusionary practices through striving towards a brighter future for EE with a determination to enhance the execution of proactive JEDI initiatives (NAAEE, n.d.-a). This is being accomplished through the creation of inclusive group forums, creation of trainings for EE providers, webinars, and other tools that engage EE providers in making EE more accessible (NAAEE, n.d.-a).

Another important aspect of accessibility is ensuring that EE programming/activities are accessible regardless of accommodation. Education and, by extension, EE is a fundamental right for all, regardless of disability or necessary accommodation (ADA, n.d.; Metaphrasis, 2023). Providing these accommodations allows participants to be fully engaged and grasp essential concepts (Metaphrasis, 2023). Once this is accomplished, participants can access EE better.

EE's purpose, as previously discussed, is to educate participants to foster positive relationships with a given environment and to inform and inspire action on environmental issues

(Dale et al., 2020; NAAEE, 2022). This cannot happen for everyone if EE is inaccessible. This is why this study is focused on understanding the different levels of need that would boost accessibility to EE.

Chapter 2- Assessing Accessibility of EE in the Great Plains

Introduction

This study focuses on questions related to accessibility within the field of environmental education (EE); this was accomplished by investigating EE providers. The accessibility questions the EE providers were asked included aspects of accessibility, including justice equity, diversity and inclusion (JEDI) initiatives, black Indigenous or a person of color (BIPOC) staff, disability accommodations, and diverse audience participation.

One significant focus of this study deals with JEDI themes. This is because historically, the exclusion of BIPOC perspectives and engagement concerning EE has occurred and continues to persist (C. A. Waters, 2022). The North American Association of Environmental Education (NAAEE) is one resource that is working to continuously diminish exclusionary practices through striving towards a brighter future for EE with a determination to enhance the execution of proactive JEDI initiatives (NAAEE, n.d.-a).

Justice includes dismantling barriers to resources and opportunities in society so that everyone can live a fair and equal life (JEDI Collaboration, 2024). Equity ensures fair access to opportunities while considering individual barriers or privileges and eliminating systemic barriers and privileges. Inclusion is understanding and embracing unique identities and perspectives to ensure that individuals feel welcomed, valued, and supported. (Centers for Medicare & Medicaid Services, 2022)

Another aspect of accessibility is providing accommodations for diverse participants, including those with special education, mobility/wheelchair, d/Deaf and hard of hearing, and blind/sight loss needs. The Americans with Disabilities Act (ADA) of 1990 states that everyone, regardless of disability or diverse needs, should have full enjoyment and equal opportunity of

public services, facilities, employment, and goods (ADA, n.d.; Beck et al., 2018). This must be the case for EE as well. These accommodations must not be seen as an "add-on" to EE but are integrated into the program's curriculum (Dominguez & Schrilling, 2013).

EE aims to provide positive experiences within the outdoors to inspire outdoor stewardship. Outdoor experiences are often considered a luxury for participants who do not require accommodations. Most individuals who have a disability or require accommodations are capable of independent or semi-independent living, like all citizens. To receive a genuinely accessible EE experience, it is important to understand the impact of their daily actions on the natural environment. The additions of accommodations to EE programs are far from being an "add-on" to environmental education. However, they can be integrated into the curriculum in ways that supplement and enrich the learning experiences of students with disabilities or require accommodations. (Dominguez & Schrilling, 2013)

When considering accommodations in EE, it is important to note that the Americans with Disabilities Act (ADA) of 1990 includes that everyone, regardless of disability or diverse need, should have full enjoyment and equal opportunity of public services, facilities, employment, and goods (ADA, n.d.; Beck et al., 2018). Recently, accommodations such as curb cuts, ramps, accessible labeled bathrooms, and wider hallways are the norm at many EE provider locations (Beck et al., 2018). Additional accommodations can be requested but require time and planning, which usually frustrates participants. For example, it can take up to three weeks for a sign language interpreter to be available for ranger programs at a given National Park Site (Hansen et al., 2017).

Other important aspects of accessibility within EE include providing programs to audiences with diverse linguistic and financial needs. First, when considering linguistic needs, it

is important to note that 17% of Americans speak a language other than English at home, the most common being Spanish. (US Census Bureau, 2023a). Another aspect of providing accessible EE would be providing programs in multiple languages.

For the consideration of providing accessible programs for participants/students that have experienced financial restrictions, there is a federally-funded program called **“**Title I Part A”. Title I Part A of the Elementary and Secondary Education Act is a federally-funded program that provides supplemental support to students in high-poverty schools (Kansas Department of Education, n.d.). ”The purpose of Title I is to ensure that all children have a fair, equal, and significant opportunity to obtain a high-quality education and reach, at a minimum, proficiency on challenging State academic standards.” (Kansas Department of Education, n.d.). Title I also applies to EE.

These aspects (JEDI, diverse audience accommodations, and providing programming to diverse audiences) all play a part in the overall accessibility for EE. These aspects will help us understand if EE is accessible to any possible future participants. In this study, we wish to understand these aspects for the EE providers within the Great Plains region. Specifically, these EE providers are within the Plains Environmental Education Partnership and the Colorado Alliance for Environmental Education (PEEPS/CO). Therefore, the following research question will guide the remaining section of this chapter.

Research Question

1. What levels of accessibility (i.e., JEDI, accommodations, and diverse population participation) do EE providers within the PEEPs/CO currently provide?

Methodology

Data for this study comes from a subset of a mixed-method survey administered in 2023 by PEEPs/CO. This survey covered other topics like EE provider organizational (structure, budget, themes/purpose, affiliations, JEDI, and staffing) and programmatic (themes, service, standards, and audience) survey questions. EE providers include nature centers, parks, zoos, aquariums, and other locations. These EE providers targeted for survey participation are within Wyoming, Nebraska, Iowa, Colorado, Kansas, and Missouri. Each of the previously mentioned states has a leading EE association. Each association was asked to identify and supply contacts for this survey effort. After this, each EE provider was contacted to participate in the survey. Considering the PEEPs/CO spatial extent, 831 EE providers were selected as potential survey participants.

Previously, the Southeastern Environmental Education Alliance (SEEA) conducted a study in 2020 intending to investigate organizational capacity, programmatic initiatives, and JEDI initiatives. The study's stated purpose was to acquire "state and regional finding(s) to inform future strategic planning efforts" (SEEA, 2020). PEEP's survey that occurred in 2023 used the same questions to understand regional trends in the field of EE.

The survey effort produced by PEEPs/CO shares goals similar to those of the previous SEEA. Therefore, survey questions were adapted from the SEEA effort. Regarding survey structure, the SEEA and PEEPs/CO instruments shared coinciding question formats and response options. This was done to find potential shared data trends that could be linked to an expanded correlation for EE providers, addressing the knowledge gaps of the SEEA. Survey questions comprised multiple-choice and fill-in-the-blank questions related to organizational and programmatic processes.

Ecorise, an EE curriculum and environmental literacy specialist, was the survey platform used for this study. Survey responses were collected from June 2023 through January 2024. While the original Ecorise platform was used for the beginning portion of data collection, due to resulting limitations involving data acquired, a Google Form was introduced throughout the data collection stage to increase the validity and precision of responses. Data cleaning and analyses were completed using SPSS (Version 29) data management and analytic software by the Applied Park Science Lab at Kansas State University. After initial data collection was completed, accessibility-related questions were extracted to inform this study and the research purpose of this thesis.

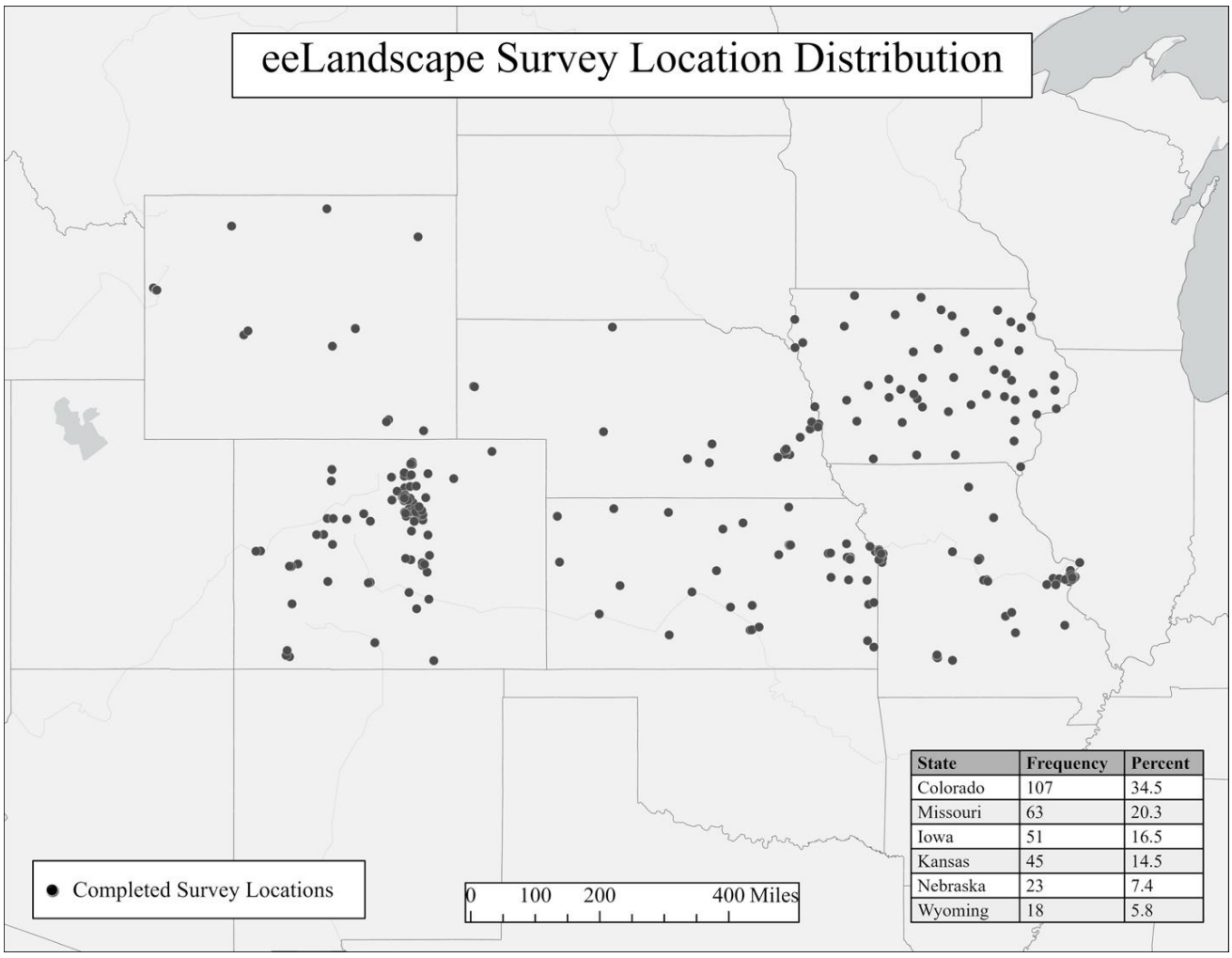
Questions related to accessibility were identified from the survey effort for data analysis. These questions deal with aspects relating to JEDI initiatives, diverse audience accommodations, and diverse audience participation (language availability, rural access, and economic instability access). (Questions are shown in Appendix A)

Results

After data cleaning and analyses, 309 quality responses (> 75% survey completion per participant) were acquired from EE providers for the overall study. The overall survey response rate was 37.2%; this meets the requirements of a 95% confidence level with +5% sampling error (Vaske J. J., 2008, pg. 108). It is important to note that this survey effort did not force responses to questions that were left blank. This led to each question having a different number of responses. Regardless, questions related to accessibility were answered by 76.8% of survey takers.

The distribution of survey participants is visualized in Figure 1; from this map, we can see the clustering of EE programs in larger populated areas. Most of the survey responses came from Colorado (n=107), and the least number of responses came from Wyoming (n=18).

Figure 1: Survey Participant Distribution



State	Frequency	Percent
Colorado	107	34.5
Missouri	63	20.3
Iowa	51	16.5
Kansas	45	14.5
Nebraska	23	7.4
Wyoming	18	5.8

One aspect of accessibility in EE that we believe is important is JEDI (Centers for Medicare & Medicaid Services, 2022; Foreman et al., 2020; JEDI Collaboration, 2024; NAAEE, n.d.-a; Romero et al., 2019; C. Waters, 2022). JEDI principles focus on ensuring equal and fair opportunities and treatment to everyone regardless of the person's identity. One way that EE providers are ensuring an increase in JEDI aspects is by investigating what JEDI initiatives they

are taking. To understand this aspect of accessibility in EE providers were asked what JEDI initiatives they have taken at their respective EE provider location (n= 250, Table 1). From this inquiry, we can see that the most common initiative that was taken was internal training provided to staff and/or board (156, 62%), followed by new partnerships (116, 46%) program and curriculum revision (116, 46%) and more inclusive marketing (104, 42%). Other notable responses include EE providers stating they are in the planning stage for implementing JEDI aspects throughout planning (72, 29%), with only 21 (8%) of EE providers noting they have already implemented JEDI aspects throughout strategic planning.

Table 1: JEDI Initiatives Taken*

Selection	Frequency	Percent
Internal training provided for staff and/or board	156	62%
New partnerships	116	46%
Program or curriculum revision	116	46%
More inclusive marketing	104	42%
Mission/vision/values revision	96	38%
Staff or board diversification	77	31%
In planning stages	72	29%
External training provided by organization to community	58	23%
Do not know/not applicable	34	14%
Formed affinity/identity groups for staff of similar racial identities	25	10%
Incorporated throughout the strategic plan	21	8%

*= multiple selections were allowed

Another aspect of JEDI that we inquired about was the inclusion of BIPOC into our EE providers, specifically if EE providers staffed BIPOC individuals. We accomplished this by asking EE providers to provide the percentage of BIPOC staff they had for full-time (n=218,

Table 2), full-time senior and executive staff (n=221, Table 3), and board of directors (n=204, Table 4). We saw that the most common response for full-time staff was 0% (125, 57%), with 1%-19% only receiving 50 responses (23%). This trend continued when looking at senior/executive staff. The most common responses were 0% (167, 76%) and 1%-19%, with 19 responses (9%). From looking at these two results, we can see that there is a more significant number of BIPOC full-time staff compared to the senior/ executive staff; this tells us there is a potential disconnect, and more BIPOC individuals have not been given the opportunity to become a senior/executive staff member. Lastly, looking at the results for the board of directors, we can see that 101 (50%) selected have 0% BIPOC staff, and 1%-19% had 48 responses (24%). Another result from this question is that 35 respondents (17%) noted that they did not know.

Table 2: Full-time BIPOC Staff

Selection	Frequency	Valid %
0%	125	57%
1%-19%	50	23%
20%-39%	12	6%
40%-59%	8	4%
60%-79%	1	1%
80%-100%	4	2%
We do not know	18	8%

Table 3: Full-time Senior and/or Executive BIPOC Staff

Selection	Frequency	Valid %
0%	167	76%

1%-19%	19	9%
20-39%	7	3%
40%-59%	2	1%
60%-79%	3	1%
80%-100%	4	2%
We do not know	19	9%

Table 4: Board of Directors BIPOC Staff

Selection	**Frequency**	**Valid %**
0%	101	50%
1%-19%	48	24%
20%-39%	12	6%
40%-59%	4	2%
60%-79%	1	1%
80%-100%	3	2%
We do not know	35	17%

Diverse population accommodations play a large part in the accessibility of EE. If an EE program/activity does not have the correct accommodations, specific individuals cannot fully experience the program/activity due to the lack of accommodation. To assess this, we asked EE providers with on-site programs what accommodations they provide (n= 399, Table 5). This question shows that mobility-related (185, 46%) and special education accommodations (172, 43%) are the most common. Meanwhile, 160 responses (43%) stated that these accommodations were not available or were not applicable for another reason.

Table 5: Onsite Diverse Population Accommodations*

Selection	Frequency	Valid %
Mobility/wheelchair accommodations	185	46%
Special education accommodations	172	43%
N/A	160	40%
Deaf/hearing-impaired accommodations	64	16%
Blind/sight-impaired accommodations	49	12%

*= multiple selections available

Another aspect of accessibility we wanted to understand was the languages in which EE programs/activities were available (n=483, Table 6). Overwhelmingly, almost every program/activity is available in English (482, 99.9%), while only 61 programs (13%) are available in Spanish. Only 2 respondents noted that programs were available in another language. Both responses noted that these programs were available in American Sign Language.

Table 6: Languages that Programs are Available in*

Selection	Frequency	Valid %
English	482	99.9%
Spanish	61	13%
Other	2	0.4%

*= multiple selections available

To understand how/if Title I individuals and schools were being served, we asked two questions to understand better if Title I students and schools are interacting with EE providers. The first question we asked was what percentage of your program participants are Title I students or educators (n= 370. Table 7). From this question, we can see that the overwhelming

response was that EE providers do not track this information. We believe this is the case because of the difficulty of knowing if participants receive Title I assistance without self-identifying.

The second question regarding Title I we asked was if their programs focused on serving Title I schools and/or students (n= 475, Table 8). Our results show that the most common result was that it was not EE providers' focus, but they still serve a diverse spectrum of students and/or schools (n= 216, 45%). The other most common response was that they do not track Title I schools/students (n= 131, 28%). Considering the previous question, it is interesting that 56% of EE providers said they did not track Title I EE participants, but in the next question, only 28% of EE providers said they did not track Title I participants. This leads us to believe that EE providers do not track detailed information but still believe that they serve Title I students and/or schools.

Table 7: Percentages of Students or Educators from Title I Schools

Selection	Frequency	Valid %
0-25%	65	18%
26-50%	54	15%
51-75%	15	4%
76-100%	30	8%
Do not track	206	56%

Table 8: Do Your Programs Focused on Serving Title I Schools and/or Students

Selection	Frequency	Valid %
Yes, this is our core beneficiary and strategic priority	66	14%

This is not our core focus, but we serve a diverse spectrum of schools and/or students	216	45%
No, this is not a focus in our outreach or programming	62	13%
We do not track Title I and/or low socioeconomic status students	131	28%

A previously discussed aspect of accessibility was the ability to access a given EE program/activity. To understand one aspect of this, we asked EE providers if their programs are accessible to rural communities (n= 472, Table 9). The most common answer to this question was that we provide programs to rural communities (n= 381, 81%).

Table 9: Access for Rural Communities

Selection	Frequency	Valid %
Yes	381	81%
No	91	19%

Discussion

JEDI

Historically and in current times, EE has suffered from a lack of diversity, especially in the United States (Bonta & Jordan, 2007). Ethnic and racial diversity in the U.S. has increased in representation throughout recent years, but EE organizations are still mainly comprised of white employees, volunteers, and visitors (Taylor, 2014).

Within the results unveiled for this effort, we can still see that many of the same trends still exist. Especially when looking at the presence of BIPOC staff within the existing hiring scheme of EE organizations and the level of diversity, or lack thereof. Primarily, when looking at

senior/executive level positions, there was a significant decrease in BIPOC staff compared to other full-time staff. This could be due to inadequate compensation, lack of support and resources, or microaggressions and discrimination (Beacham, 2024), but it is important to note that our data did not specifically research this aspect.

We found the percentage of full-time staff, senior staff, and board members were most answered as having 0% of staff identifying as BIPOC. Therefore, this creates an imperative need for more inclusion of individuals from all racial and ethnic backgrounds to ensure representation is a continuous mainstay in the hiring opportunities of collectives. Further, as a comparison to current findings within this effort and when evaluating 2022 U.S. Census Data, it can be observed that, on average, there is a population of 12.6% BIPOC individuals within the six study states (US Census Bureau, 2023b). This shows that our EE providers have less BIPOC staff compared to the population average.

When considering movement to further the diversification of the EE field, inclusion can be initiated and progressed with the implementation of JEDI initiatives specifically (NAAEE, n.d.-a). Our study included a question that targeted understanding what JEDI initiatives have been taken by EE providers in the Great Plains region. The most commonly used initiative included internal training provided for staff, followed by the formation of new partnerships.

One interesting finding unveiled that only 8% of EE organizations noted they incorporated JEDI initiatives throughout their strategic planning, which was found to have the lowest response rate. With 29% of respondents stating that they are in the process of implementing JEDI initiatives in future planning (Table 1), this shows that JEDI initiatives have not been continuous elements within planning efforts. However, in the future, JEDI initiatives will be included within systematic methods that can ultimately guide EE organizations' short-

and long-term direction (e.g., vision and mission statements, organizational values and protocols, engagement strategies, stakeholder involvement, etc.).

These results reflect that steps are being taken to JEDI within the field of EE. However, the expansion of efforts is needed in addition to resources to evolve current processes further, which is imperative to progressing the future of EE. This is not only to ensure a sense of belonging is present within all aspects of the actions within EE organizations and outcomes produced for participants or potential visitors but also to amplify hiring opportunities for all (JEDI Collaboration, 2024). A sense of belongingness is important to foster because belongingness has a direct correlation to social connection (Pardede & Kovač, 2023; Tellhed et al., 2017), and correlates to the likelihood of participation in EE (Tellhed et al., 2017).

Diverse Participant Accommodations

In this study, we looked at what accommodations the EE providers in the Great Plains provide on-location. 46% of locations can provide mobility/wheelchair accommodation, and 43% provide special education accommodations. While 40% of EE providers noted that they do not provide these accommodations. This was a very large surprise that many locations do not provide mobility, special education, Deaf, or blind accommodations. From our study, we can see that some accommodations can be made at some locations. However, we believe that more work needs to be done to increase the availability of accommodations that are made for diverse audiences. This conclusion is not a new theme (Dominguez & Schrilling, 2013). Outdoor experience has always been seen as a luxury and individuals that need accommodations do not always get to experience this luxury (Dominguez & Schrilling, 2013).

Languages

Language is another aspect of accessibility that is important to having accessible EE programs. The language that an individual speaks is a large part of their identity, and validating this by understanding its importance will help increase students' overall educational success. (Ferlazzo, 2017). EE providers are validating this by offering programs in multiple languages.

In 2023, a study was done in the USA by the Census Bureau looking into languages spoken at home. From this study, we can see that over the age of 18, 83% of Americans only speak English at home, while 17% of Americans speak another language (10% are Spanish speakers). (Note that this data is for the continental US and not a completely accurate representation of our study locations; information for the study site only was not available) (US Census Bureau, 2023a). Considering this data and comparing it to our results stating that 13% of programs are given in Spanish, we believe that EE providers are making a reasonable effort to accommodate Spanish speakers. Contrasting the Census data states, there is another 7% of Americans that speak another language; comparing this to our data, we can see that EE providers are not accommodating these individuals.

Title I

Our study results show that 59% of EE providers state that their programs serve Title I students and/or schools. Only 13% of EE providers stated this is not a focus when considering their program. The remaining 28% of EE providers stated they did not track if their program's audience includes Title I students and schools. Considering this we can conclude that EE providers believe serving Title I schools and students is important, but do not track if they receive EE programs/activities. This makes it very hard to assess if Title I participants have accessible access to EE.

Rural Communities

The number of individuals varies per state, but within our study site, 5,423,989 individuals (26%) live in rural areas. (U.S. Census Bureau, 2020). Those are several potential EE participants, and our results show that 81% of our EE providers serve rural areas. This leads us to believe that EE is accessible for most rural locations.

Limitations

• This project was initiated before the involvement of Kansas State University for analysis processes. The Applied Park Science (APS) Lab did not help develop, monitor, or collect the involved data. Based on the progression of the steps, the timeline of data transfer involved information being transitioned from Ecorise to KACEE and then to the APS Lab.

• Many questions have differing response rates. This factor led to a portion of the questions displaying a more representative reflection of the present sample. One way this could have been negated is to include forced response questions, which require each participant to answer the applicable inquiries where this survey logic is present/applied.

• The data from this study is a subset of a more extensive survey, if this was a stand-alone study there could have been more data collected. Due to being a part of a larger study, more accessibility questions were not asked

Future Research

This research project provides an understanding of levels of accessibility within EE. The research does not explicitly understand what the best steps are to address the below acceptable aspects of EE (BIPOC staff, diverse audience accommodations, and language availability) that our study identified. To fill this, more research needs to occur to understand how to increase these levels of accessibility.

Another topic that needs continued future research is aspects our survey did not address. The study did not inquire about aspects of accessibility, these include but are not limited to color blindness, cognitive disabilities (ADHD/ADD, dyslexia, and other learning disabilities), and financial needs. These aspects and others should be considered when this topic is researched in the future.

Conclusion

The primary purpose of our study was to understand the levels of accessibility within EE in PEEPS/CO. We concluded that there are some aspects (increased JEDI initiatives and rural programming) where EE has an acceptable level of accessibility. In contrast, other aspects (BIPOC staff percentage, diverse participation accommodations, and language availability) need to have their accessibility increased so that EE can be truly accessible. Now that we understand which aspects need to be addressed to increase levels of accessibility, future research can be done to understand how best we can increase accessibility of these aspects.

Future research needs to be done to better understand how best to increase accessibility related to BIPOC staff, diverse audience participation, and language availability. It will be important for this information to be communicated to EE providers in the PEEPs/CO. so that the recommended actions can be taken.

Chapter 3- EE Accessibility for d/Deaf and Hard of Hearing Individuals

Disclaimer

As a hearing individual, I will say that I am not a voice for the Deaf community. I would rather have a way to amplify their thoughts on this topic, in the hope that this research can spread awareness and increase accessibility for Deaf community members.

Introduction

There are 11 million individuals, 3.6% of U.S. citizens, who consider themselves deaf or have profound hearing problems. Additionally, the Hearing Loss Association of America estimates that 48 million Americans experience some sort of hearing loss (National Deaf Center, 2021).

This being such a large population in the U.S. they must be provided with accessible access to environmental education (EE). Accessibility for d/Deaf individuals on a day-to-day basis is a significant issue (National Deaf Center, 2024). In the U.S. a majority of people speak English and that can disclude many d/Deaf individuals that use American Sign Language (ASL). This means that there is a language barrier for a majority of d/Deaf individuals (National Deaf Center, 2021).

Unfortunately, the history for d/Deaf individuals have experienced misunderstanding, oppression, and discrimination (Bridges for Deaf and Hard of Hearing, 2019; Gala, 2023; National Deaf Center, 2024). For example, in 1880 there was a conference in Milan where it was decided ASL was banned from being taught in schools. This was because oralism (communicating orally with an emphasis on lip reading) was being stressed. During this

conference Alexander Gram Bell spoke for 3 days, voicing his opinion of oralism being the best for deaf individuals. While advocates were only given 3 hours to argue that ASL is more beneficial compared to oralism (Bridges for Deaf and Hard of Hearing, 2019)

Fortunately, there has also been remarkable resilience, beauty, and strength for the Deaf community (Bridges for Deaf and Hard of Hearing, 2019). In 1988 one of the most significant movements was the Deaf President Now movement at Gallaudet University. This movement was started when a hearing person was chosen to be the president of Gallaudet University over two deaf candidates who were qualified. 77% of students are d/Deaf or hard of hearing (Gallaudet University, n.d.) students were not happy with this choice and protests erupted around campus. After multiple days of protest, the hearing candidate stepped down and a deaf professor was appointed as the new president (Bridges for Deaf and Hard of Hearing, 2019; Gala, 2023).

One important part of Deaf history has been the creation of Deaf culture. One aspect of Deaf culture is the understanding that being deaf isn't a disability. In the Deaf culture many consider being deaf a cultural/linguistic difference (Minnesota Hands and Voices, n.d.; National Deaf Center, 2024). Another important part of Deaf culture is the use of sign language, primarily ASL in the US, as a primary form of communication (Gala, 2023; Minnesota Hands and Voices, n.d.; National Deaf Center, 2024). It is important to note all individuals who are deaf are not members of the Deaf culture. Being a member of Deaf culture is something an individual chooses or does not choose after being exposed to it (National Deaf Center, 2024).

A technological accommodation that has been made for deaf individuals that has some stigma/controversy is the cochlear implant (Deaf Action, 2021). Cochlear implants are a piece of technology that allows some but not all deaf individuals to have surgery. After surgery, the individual will be able to hear when the device is charged. This piece of technology is somewhat

controversial because some critics argue deaf individuals are getting surgery to try and become ‘hearing’ therefore denying their identity as a deaf individual. While other deaf individuals do not see an issue with this surgery and see it as an option for deaf individuals (Deaf Action, 2021). One popular reason for students to get cochlear implants is the availability for deaf students and hearing students to go to the same school with less of a language gap. It is still recommended that additional support is given to these students, especially at the beginning of their educational experience (Chute, 2008).

After understanding more about d/Deaf individuals' experiences and Deaf culture we can start to understand how best EE providers can accommodate them. There is a low quantity of research when investigating DHH accessibility and accommodations within EE. Most research related to DHH accommodations are focused on K-12 education. These sources tell us that DHH students are not being provided with an accessible education (Bowen & Probst, 2023; Leppo et al., 2014; Moreland et al., 2022).

When examining some accommodations that can be utilized considering nature based education experiences include but are not limited to audio descriptions, subtitles, assistive listening systems, printed transcripts of the program, or a qualified ASL interpreter (Hansen et al., 2017). Hansen conducted a study in 2017 that sought to understand d/Deaf and hard of hearing (DHH) accommodations within National Park Service (NPS) sites. This study accomplished this by contacting all NPS sites’ Chief of Interpretation (leader of programming, project management, and visitor services at NPS site) to inquire about what accommodations the site has for DHH individuals. The most common accommodations at NPS sites are open/closed captions (81% of sites) and audio listing devices for visitor center use for exhibits and films (59% of sites) (Hansen et al., 2017).

Another piece of literature to focus on is a thesis that focused on creating an EE program for a school for the deaf. This project's goal was to provide an enriching EE experience for deaf students, with a program focusing on "going green". This EE program is intended to provide students with hands-on experience and knowledge on how to personally take responsibility for improving the environment to inspire future advocacy (Hicks, 2014).

All the previously discussed topics help us glimpse into DHH's world, with an emphasis on EE and outdoor experiences. Previous research has not engaged the DHH community and asked them how EE can be more accessible to them. That is what this study is attempting to do. Specifically, this is being accomplished by asking first, what if any barriers exist for DHH individuals in EE. Secondly, asking if they feel like they belong within the world of EE. These questions will help us understand a baseline of information that we hope can inform future research on this topic.

The specific veins of questions were chosen due to previous research. First looking at perceived barriers, in disability research it is important to identify and quantify barriers (Zarb, 1977). To understand this, we inquired survey population and what/if any barriers existed for them in EE, alongside asking how they could be dissolved. The second vein of research focuses on sense of belongingness. A sense of belongingness has been studied in many contexts specifically with those that have diverse needs. The literature tells us that belongness is very important when understanding if an individual will participate in a given activity (Daley et al., 2018; Tellhed et al., 2017; Weeber, 1999). Specifically, DHH individuals' belongingness has not been studied within EE, this study hopes to understand their sense of belongingness and if it affects their likeness to participate in EE. Belongingness and perceived barriers are two aspects that are targeted in this study to better understand accessibility for DHH individuals with in EE.

Research Questions

1. What if any barriers influence a d/Deaf or hard of hearing individuals' experiences within an environmental education location?
    a. How can these barriers be reduced or removed?
2. Does belongingness related to environmental education for d/Deaf and hard of hearing individuals play a role in the likeliness of interaction in environmental education opportunities?

Methods

After reviewing the literature related to accessibility for DHH individuals in EE we noticed there was a lack of published input from individuals that are DHH individuals. Therefore, this is what this project hopes to focus on, the aspects of accessibility we wanted to understand/identify perceived barriers and a sense of belongingness in the context of EE for DHH individuals. To accomplish this a qualitative online survey was created and approved by Kansas State University's Institutional Review Board (IRB-12356, Appendix B).

When considering qualitative research it is important to answer fundamental questions related to a selected paradigm, these questions are the "ontological question" and "epistemological question" (Guba & Lincon, 1994). The ontological question examines how things really are and how they work in the world (Guba & Lincon, 1994). This question has relations to how the world exists subjectively (Villamin et al., 2024). While the epistemological question examines the relationship between the research participant and what there is to be known (Guba & Lincon, 1994). The epistemological question relates the research participant to the how they view the world in a relativist manner (Villamin et al., 2024).

The online qualitative survey is rooted in a naturalistic paradigm, to collect rich data to understand complex narratives (Guba & Lincoln, 1982). The naturalistic paradigm recognizes that lived realities have a subjective nature, and allows a holistic approach to understanding human experiences (Guba & Lincoln, 1982)

. A qualitative survey was chosen to allow participants to provide straightforward descriptions of their experiences, which is ideal for the selected area of study due to the little that is known (Doyle et al., 2020) related to individuals who are DHH and their experience with EE.

Additionally, a typical research design within the naturalistic paradigm is the use of a qualitative descriptive approach. This approach allows both the collection of straight forward and comprehensive descriptions of events and perspectives (Villamin et al., 2024). This is accomplished through interactions between research participants and researchers where the research participants describe the perspectives and experiences related to the research topic (Villamin et al., 2024). This research design is consistent with a subjectivist ideals of epistemology and relativist ideals of ontology (Villamin et al., 2024).

Survey Design and Distribution

Note: This survey was created with the input of a deaf educational professional to ensure that the survey was appropriate for the DHH community.

To ensure that this survey is taken by the targeted audience two qualifying questions were used. The first qualifying question ensured that the survey participant was over the age of 18. The second qualifying question inquired if the survey participant was either d/Deaf or hard of hearing. If the potential participant is older than 18 and self identifies as either d/Deaf or hard of hearing the potential participant was directed to the beginning of the survey. Next the research participant were asked if they have previously experienced EE. To ensure a consistent

understanding of EE a definition and examples were provided. The provided definition and examples are shown below:

> "Environmental education is a process of imparting knowledge and awareness about the environment and its associated challenges, developing skills and expertise to address these challenges, and fostering positive attitudes and motivations to make informed decisions and take actions to solve these challenges. Environmental education programs designed for youth also seek to enhance place connection improve positive youth development and meet educational standards (Dale et al., 2020).Examples of environmental education programs/ activities include formal and/or informal interaction with staff and/or non-personal resources (signs, brochures, web pages, etc.) at locations like nature centers, parks, zoos, aquariums, etc. that cover the goals of environmental education that were discussed above."

When asked if they experienced EE, they had three response options: *yes*, *I am unsure*, and *no*. Depending on how they answered this question they were presented with differing questions. (A detailed breakdown of the qualitative survey and the embedded skip logic is shown in Appendix A.)

The survey distribution was accomplished by contacting six state d/Deaf and Hard of Hearing Associations and another DHH advocacy associations (e.g., DHH advocates) to inquire for survey participation and survey distribution. These DHH advocates were all located within the PEEPs/CO locations (Wyoming, Nebraska, Iowa, Colorado, Kansas, and Missouri). All contacts were sent the same email script, which provided a brief introduction to the study as well as the survey link (Example in Appendix C). When contacting DHH advocates initial contact

was made with no prior contact, which led to there being a less likely possibility of survey participation/distribution (Pashaieva, 2024).

After contacting six DHH advocates two responded to inquire for more information before agreeing to participate or share our qualitative survey. After additional information was provided, one contact made it known that a survey being provided in English instead of ASL was not accessible to the Deaf community, especially for those that English is not their first language. After our conversation, the contact agreed to help distribute the survey but warned us that the survey being only available in English could limit possible responses. The second individual who reached back out to us for more information after a discussion agreed to share our survey but asked if we could create an infographic to use when sending out the survey to have a visual aid when distributing (Example in Appendix D).

Results

After data collection one completed survey response was collected from a Deaf individual (n= 1) their pseudonym will be “Respondent 1”. Respondent 1 noted that they have experienced environmental education in the past, which allowed the maximum amount of information to be collected related to the goal of our survey.

Barriers

First, considering the vein of questions of potential barriers in EE and how to reduce or remove barriers for DHH individuals. Respondent 1 stated the following response when asked what barriers they perceived within the context of EE for DHH individuals :

> “1) Use of spoken/written English as the sole or primary means of education - many DHH people use English as their second or third language, and even if written materials are written with plain language principles, they are still not necessarily accessible. 2)

assuming a baseline level of knowledge that is not actually present due to a lack of incidental learning opportunities (as most incidental learning is auditory)"

From respondent 1's response, it is important to note that there is one primary barrier, of a linguistic difference, but is important to understand this barrier has many levels within. First considering the linguistic barrier it is important to note that most EE is taught in English. The issue of "DHH people use English as their second or third language" means that even if DHH individuals participate in EE programs/activities Participant 1 believes that there could still be a disconnect due to linguistic differences. The second barrier they stated also dealt with another aspect of the linguistic barrier. Respondent 1 stated that a baseline of information is not present due to a lack of incidental learning. Incidental learning usually occurs unintentionally and primarily conversationally. If the DHH individual cannot communicate with those around them then they are missing out on this learning opportunity. These results and previous studies lead us to believe that historically that DHH individuals have had fewer EE opportunities provided to them, or if provided EE programs haven't been genuinely accessible (Hansen et al., 2017; Hicks, 2014). Respondent 1 believes that this is due to a disconnect in linguistic differences.

Next Respondent 1 was asked how to reduce or remove these barriers for DHH individuals in EE, Respondent 1 said:

"Before anything else: develop genuine relationships with Deaf people who will be honest with you about the utility of your efforts. 1) creating ASL videos using Deaf interpreters or community members (and using plain language principles for written materials) 2) offer a range of educational materials at different levels 3) partner with state schools for the Deaf (or good mainstream programs - ask your community members) to incorporate environmental education early"

When considering how to dissolve the previously discussed linguistic barrier, Respondent 1 noted there are multiple ways reduce or remove this barrier. The first way to reduce or remove the previously discussed barriers is to "Before anything else: develop genuine relationships with Deaf people who will be honest with you about the utility of your efforts." Participant 1 said that this is the most important step when trying to understand a community. If this step is overlooked, it can often lead to disagreement when possible future steps are made. The possible disagreement could be due to the community you are serving not feeling like they had a voice in the effort for them (Ramirez et al., 2023). Respondent 1's beginning thoughts echo the importance of communicating with DHH individuals to understand to accommodate them best. This sentiment related to one purpose of this study, which is the importance of directly engaging with DHH individuals to understand accessibility.

Additional recommendations of how to reduce or remove perceived barriers by Respondent 1 included the creation of EE videos that are in ASL by interpreters or other DHH community members. This recommendation directly works to dissolve the linguistic barrier discussed above. The following recommendation they stated was the creation of varying levels of complexity of EE materials/programs, this directly ties to the previously discussed idea that DHH individuals potentially have had less access to EE learning opportunities. The last recommendation that Respondent 1 provided was to partner with state schools for the Deaf (or good mainstream programs to incorporate environmental education early". Partnering with schools for the Deaf could help to dissolve the linguistic barrier. This recommendation will also increase access to EE programs for students at a younger age to dissolve a possible the lack of accessible EE opportunities.

Belongingness

As previously discussed belongingness is defined as a connectedness to groups and ideas (Daley et al., 2018; Tellhed et al., 2017; Weeber, 1999). Belongingness also ties into the likelihood of participating in certain activities (Tellhed et al., 2017). Pertaining to our research if an individual does not feel like they belong within an EE program/activity then it is believed that their likelihood of seeking out these opportunities is less (Pardede & Kovač, 2023; Ramirez et al., 2023; Tellhed et al., 2017). Sense of belongingness can be affected by an individual's experiences, in this study we hope to understand this correlation. To understand belongingness for DHH individuals we first asked how they define belongingness to understand how they perceive belongingness. Respondent 1 said that belongingness is:

> "Knowing that if I decide to attend an advertised event or make a trip to a state or national park, I will have full access without having to jump through multiple hoops."

From this response, Respondent 1 has a direct correlation between accessibility and belongingness. To understand levels of belongingness, we asked how they would describe their belongingness to EE, respondent 1 said their belongingness was, "virtually nonexistent".

This response is powerful and equally revealing to Respondent 1's perceived level of accessibility of EE for DHH individuals. Considering this response and the previous response we can presume that if EE is not accessible Respondent 1's their belongingness decreases significantly. To further understand this idea, we asked how their belongingness affects their likelihood of participating in EE activities/programs. Respondent 1 said:

> "This plays a role in my likelihood to participate in literally anything outside of my house."

This response further cements the idea that that if an individual does not feel like they belong their likelihood of participating in EE and other experiences goes down considerably if they feel like someone believes that they do not belong.

Discussion

Barriers

From Respondent 1's answers, we can see that they believe that EE is not accessible to individuals who are DHH. DHH individuals may face barriers including a linguistic barrier. Almost all EE providers primarily provide their programs/activities in English (99.9%, Table 6). This means that for DHH individuals for whom English is not their first language, EE truly is not accessible to these individuals. Another aspect of the linguistic barrier Respondent 1 discussed was missing out on incidental learning, this is because most of these experiences happen in English. Both barriers that Respondent 1 stated correlate to the significant aspect of the cultural view of being Deaf, this is that being Deaf is a linguistic difference, not a disability.

To dissolve the perceived barriers that Respondent 1 discussed, they proceeded to state how they believe the barriers can be dissolved. They said first and foremost, it is important to understand the Deaf community. This can be done by communicating with DHH individuals and establishing a genuine relationship with these individuals. Without input from DHH individuals, it is impossible to create a genuinely accessible EE program/activity. Participant 1 said a couple of ways to make this connection with DHH individuals is reaching out to DHH advocates, DHH associations, and schools for deaf students.

The following way to dissolve the described linguistic barrier is by the creation of ASL videos and programs for d/Deaf individuals in ASL. If a program communicated in ASL cannot

be done, sharing EE information with ASL interpreters so that they can communicate the information to DHH individuals.

To dissolve the barrier of assuming DHH individuals have a baseline level of knowledge of EE, EE providers can offer an accessible range of educational materials for varying levels of education related to EE. Both this barrier regarding the historical lack of accessible EE opportunities and the linguistic barrier can be dissolved by partnering with state schools for the Deaf and other mainstream schools (schools that include DHH and hearing individuals). These schools focus on providing an accessible education for DHH individuals, this means that contacting these schools could solve both the linguistics barrier by providing the correct language the DHH individual prefers, and the baseline level of knowledge for future generations if partnerships are made.

Belongingness

As previously discussed, an individual's sense of belongingness has a large part to play when considering if an individual is likely to participate in an EE program/activity. This is because if an individual does not feel that they belong within a group or situation there is a correlation suggesting they will not interact with that group or activity (Daley et al., 2018; Tellhed et al., 2017; Weeber, 1999). From this study's results, it is believed that this is also the case for Respondent 1 and they believe this is true for most d/Deaf individuals. Respondent 1 stated that their sense of belongingness related to EE was “virtually nonexistent” then when asked if belongingness plays a role in interacting with EE experiences, they stated that belongingness “plays a role in my likelihood to participate in literally anything outside of my house”. From this, we can see that our participant does not have a sense of belongingness and because of that, they are unlikely to participate in EE activities/programs.

When investigating belongingness, we could see that our participant response shows that levels of accessibility play a role in belongingness. This is to be believed because when asked to define belongingness our participant noted that their belongingness is tied to having “full access without having to jump through multiple hoops”.

From Respondent 1’s response, it is believed that if DHH individuals are not given the proper accommodations for perceived barriers their belongingness will decrease, and therefore lead to a decrease in the likelihood of participating in EE programs/activities.

Limitations

When considering this project some limitations must be considered. This project has had some limitations. The first limitation of this study was that the survey was in written English. After this survey it is believed that future research with d/Deaf individuals should have a significant emphasis on being provided in ASL, this allows individuals that use ASL to access the survey and respond to the survey in their primary language.

Another limitation that must be understood is the short amount of time the survey had been available. The survey was only available from September 27th- October 10th. We would have preferred to have a longer time for data collection so that we could have more input from the DHH community.

The last limitation to consider is that six DHH advocates were contacted within the eelandscape study location, each of these contacts represented the six study states. Out of those only two responded, which means that the possible individuals who could have seen the survey decreased.

Future Research

In this study we strove to achieve an understanding of barriers and a sense of belongingness for DHH individuals, we accomplished this through a qualitative response to our online survey. While this response was powerful and helped understand Participant 1's views on the subject, future research should be done to collect more DHH individuals' responses as well. Additionally, other future research should also strive to inquire about other factors that relate to DDH individuals' accessibility to EE.

After this research is done the key steps to increase accessibility, and future research should be conducted to understand how the steps that were taken were performed. This research will help put research ideals into practice so that DHH individuals can participate in EE without barriers.

Conclusion

From Respondent 1's statement, we can see that their number one perceived barrier is a linguistic one. This is broken into two aspects, first DHH individual's first language is not always English. This is important because EE is not accessible to DHH individuals if the information is not in their preferred/most comprehended language. The second aspect of the linguistic barrier Respondent 1 stated was related to incidental learning, which this related to informal EE. Respondent 1 stated that incidental learning primarily happens in English. Respondent 1 said that the linguistic barrier can be dissolved by first creating EE resources in ASL, creating a range of EE resources, and partnering with state schools for the Deaf.

When Respondent 1 was asked questions related to belongingness, they said that it has a large relation to whether they feel they have full access without jumping through multiple hoops. When asked about their sense of belongingness in EE they said it was virtually nonexistent, and their sense of belongingness does affect their likelihood of participating in EE in the future.

In conclusion according to Respondent 1's experiences and opinions, EE is not accessible to DHH individuals. We believe that this is because of a combination of the perceived linguistic barriers and lack of a sense of belonging. These combine to lead us to believe that in its current state EE is not accessible for DHH individuals.

Chapter 4- Reflection

I remember when interviewing for my master's position my former advisor, Dr. Ryan Sharp, asked me “What do you want to research?”. Almost two and a half years ago I did not know how to answer that question. I remember saying “I want to research accessibility to parks and protected areas”. He responded with “that is a large topic, you will need to refine that”. I remember after that meeting going into a panic after not knowing what I wanted to research. So much so that I almost threw that idea away.

It was not until sitting at the Gateway Arch National Park helping with some on-site surveying and talking to a ranger with an “I know sign language” on his name tag did I realized that why would I throw this dream away, I need to refine the specifics. After this moment I realized that in some context with the outdoors I wanted to research accessibility for DHH individuals.

It was not until after my first semester of graduate school that my new advisor Dr. Sarah Jackson came to me with a possible way of achieving this research dream. This opportunity was with KACEE and their eelandscape analysis. After this, we agreed that the eelandscape analysis and the addition of the DHH accessibility study could make up my thesis.

A year and a half later and 3 different projects with their respective reports later here I am finishing my thesis. If I had told myself 2 years ago that I would have 3 projects that were not completely related I would have told myself, I was crazy. Here I am though I would not have believed it personally. If it was not for the support of the Applied Park Science Lab and especially Dr. Sarah Jackson pushing me to not settle for the easiest route and pushed me to keep going this would not have happened.

These projects have opened my eyes to thoughts and ideas that I would have never learned about, this is especially the case for the DHH study. I have learned so much about DHH individuals and want to keep learning so that I can do my part to create a more accessible world for them.

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Appendix A- Surveys

eeLandscape Accessibility Survey

1. What justice, equity, diversity, and inclusion initiatives has your organization undertaken? (Select all that apply)
    - Internal training provided for staff and/or board
    - External training provided by organization to community
    - Incorporated throughout strategic plan
    - Mission/vision/values revision
    - New partnerships
    - Program or curriculum revision
    - Staff or board diversification
    - More inclusive marketing
    - Formed affinity/identity groups for staff or similar racial identities
    - In planning stages
    - Do not know/not applicable

2. What percentage of your full-time staff identify as BIPOC (Black, Indigenous, or Person of Color)?
    - 0%
    - 0%-19%
    - 20%-39%
    - 40%-59%
    - 60%-79%
    - 80%-100%
    - We don’t know

3. What percentage of your full-time senior/executive staff identify as BIPOC (Black, Indigenous, or Person of Color)?
    - 0%
    - 0%-19%
    - 20%-39%
    - 40%-59%
    - 60%-79%
    - 80%-100%
    - We don’t know

4. What percentage of your board of directors identify as BIPOC (Black, Indigenous, or Person of Color)?
    - 0%
    - 0%-19%

- 20%-39%
- 40%-59%
- 60%-79%
- 80%-100%
- We don't know

1. In what language(s) is this program available? (Select all that apply)
    - English
    - Spanish
    - Other _____

2. If your program is hosted onsite, what accommodations do you have for individuals with disabilities? (Select all that apply)
    - Mobility/wheelchair accommodations
    - Deaf/hearing-impaired accommodations
    - Blind/sight-impaired accommodations
    - Special education accommodations
    - N/A

3. Does this program focus on serving Title I schools and/or students for low socioeconomic backgrounds?
    - Yes, this is our core beneficiary and strategic priority
    - This is not our core focus, but we serve a diverse spectrum of schools and/or students
    - No, this is not a focus in our outreach or programming
    - We do not track Title I and/or low socioeconomic status students

4. What percentage of students and/or educators were from Title I schools in the past full year of programming?
    - 0%-25%
    - 26%-50%
    - 51%-75%
    - 76%-100%
    - Do not track

5. Is this program accessible and available to rural communities?
    - Yes
    - No

d/Deaf and Hard of Hearing Survey

This questionnaire should only be completed once per person, and by individuals 18 years of age and older. Responses to this request are voluntary and anonymous; there are no right or wrong answers. Your name will never be associated with your answers, and all contact information will be destroyed when the data collection is concluded. No action may be taken against you for refusing to supply the requested information at the beginning or at any time during the questionnaire process.

BURDEN ESTIMATE STATEMENT: Public reporting burden for this form is estimated to average 10 minutes per response. Direct comments regarding the burden estimate or any other aspect of this form to Dr. Sarah Jackson at sjackso@ksu.edu. If there are any additional questions about protocol taken for this survey you can contact Lisa Rubin at rubin@ksu.edu.

All personal identifiers will be removed from data. When possible, data will be presented in aggregate, and quoted responses may be used without personally identifiable information. However, the data from this study may be retained without personally identifiable information and be used in future research on related topics.

1. Do you agree to participate in this study?

    a. I agree
    b. I do not agree

    If I agree- continue to survey

    If I do not agree- take to end of survey

2. This survey is only meant for adults, are you at least 18 years old?
    a. Yes
    b. No

    If yes- continue to Q2

    If no- take to end of survey

3. Are you Deaf/deaf or hard of hearing?
    a. Yes
    b. No

    If yes- continue to Q3

    If no- take to end of survey

    NOTE: Above question 4 there will be a definition of environmental education.

    Environmental education is a process of imparting knowledge and awareness about the environment and its associated challenges, developing skills and expertise to address these challenges, and fostering positive attitudes and motivations to make informed decisions and take actions to solve these challenges. Environmental education programs designed for youth also seek to enhance place connection improve positive youth development and meet educational standards (Dale et al., 2020).

    Examples of environmental education programs/ activities include formal and/or informal interaction with staff and/or non-personal resources (signs, brochures, web pages, etc.) at locations like nature centers, parks, zoos, aquariums, etc. that cover the goals of environmental education that were discussed above.

4. Have you ever participated in formal or informal environmental education programs /activities before?
    a. Yes
    b. I am unsure
    c. No

If yes- continue to section A

If I am unsure: continue to section B

If no- continue to section C

Section A- Participated in Environmental Education

5. What, if any, barriers do you believe there are for d/Deaf and hard of hearing individuals in education?
6. For any barriers you stated in the previous question, what do you think are the best ways to dissolve those barriers?

7. What, if any, barriers do you believe there are for d/Deaf and hard of hearing individuals in environmental education?
8. For any barriers you stated in the previous question, what do you think are the best ways to dissolve those barriers?

9. How do you define belongingness?
10. How would you describe the current sense of belongingness for d/Deaf and hard of hearing individuals within environmental education?
11. How, if at all, do you think belongingness plays a role in your probability to partake in environmental education opportunities?

12. Considering previous questions, what, if any, factors would increase your accessibility to environmental education opportunities that were not included within this survey and should be studied further?
13. What final thoughts do you have and would like to share?

Section B- I am unsure if I have participated in Environmental Education

5. Please specify why you selected "I am not sure"? If you can remember a specific moment that you are unaware if it would qualify as environmental education, please describe the situation.
6. What, if any, barriers do you believe there are for d/Deaf and hard of hearing individuals in education?
7. For any barriers you stated in the previous question, what do you think are the best ways to dissolve those barriers?
8. What do you feel is important in increasing accessibility for d/Deaf and hard of hearing individuals within a predominantly hearing world?
9. What final thoughts do you have and would like to share?

Section C- Have not participate in Environmental Education

10. What, if any, barriers do you believe there are for d/Deaf and hard of hearing individuals in education?
11. For any barriers you stated in the previous question, what do you think are the best ways to dissolve those barriers?
12. What do you feel is important in increasing accessibility for d/Deaf and hard of hearing individuals within a predominantly hearing world?
13. What final thoughts do you have and would like to share?

All sections will be asked demographic information

1. What is your residential ZIP code?
2. What year were you born?
3. What gender do you best identify with?
4. What races and/or ethnicities do you identify with?

Appendix B- IRB Approval

eeLandscape Accessibility Survey

KANSAS STATE UNIVERSITY | University Research Compliance Office

TO: Sarah Jackson
Horticulture & Nat Resources

Proposal Number: IRB-12143

FROM: Lisa Rubin, Chair
Committee on Research Involving Human Subjects

DATE: 03/20/2024

RE: Proposal Entitled, "PEEPs and Co Environmental Education Landscape Analysis."

The Committee on Research Involving Human Subjects / Institutional Review Board (IRB) for Kansas State University has reviewed the proposal identified above and has determined that it is EXEMPT from further IRB review. This exemption applies only to the proposal - as written – and currently on file with the IRB. Any change potentially affecting human subjects must be approved by the IRB prior to implementation and may disqualify the proposal from exemption.

Based upon information provided to the IRB, this activity is exempt under the criteria set forth in the Federal Policy for the Protection of Human Subjects, **45 CFR §104(d), category:Exempt Category 4 Subsection ii.**

Certain research is exempt from the requirements of HHS/OHRP regulations. A determination that research is exempt does not imply that investigators have no ethical responsibilities to subjects in such research; it means only that the regulatory requirements related to IRB review, informed consent, and assurance of compliance do not apply to the research.

Any unanticipated problems involving risk to subjects or to others must be reported immediately to the Chair of the Committee on Research Involving Human Subjects, the University Research Compliance Office, and if the subjects are KSU students, to the Director of the Student Health Center.

Electronically signed by Lisa Rubin on 03/20/2024 6:55 PM ET

203 Fairchild Hall, Manhattan, KS 66502 | (785) 532-3224 | fax: (785) 532-3278

d/Deaf and Hard of Hearing Accessibility Survey

KANSAS STATE UNIVERSITY | Office of Research Integrity, Compliance and Security

TO: Sarah Jackson
Horticulture & Nat Resources

Proposal Number: IRB-12356

FROM: Lisa Rubin, Chair
Committee on Research Involving Human Subjects

DATE: 09/26/2024

RE: Proposal Entitled, "d/Deaf and Hard of Hearing Environmental Education Accessibility Assessment."

The Committee on Research Involving Human Subjects / Institutional Review Board (IRB) for Kansas State University has reviewed the proposal identified above and has determined that it is EXEMPT from further IRB review. This exemption applies only to the proposal - as written – and currently on file with the IRB. Any change potentially affecting human subjects must be approved by the IRB prior to implementation and may disqualify the proposal from exemption.

Based upon information provided to the IRB, this activity is exempt under the criteria set forth in the Federal Policy for the Protection of Human Subjects, **45 CFR §104(d), category:Exempt Category 2 Subsection ii.**

Certain research is exempt from the requirements of HHS/OHRP regulations. A determination that research is exempt does not imply that investigators have no ethical responsibilities to subjects in such research; it means only that the regulatory requirements related to IRB review, informed consent, and assurance of compliance do not apply to the research.

Any unanticipated problems involving risk to subjects or to others must be reported immediately to the Chair of the Committee on Research Involving Human Subjects, the University Research Compliance Office, and if the subjects are KSU students, to the Director of the Student Health Center.

Electronically signed by Lisa Rubin on 09/26/2024 4:34 PM ET

203 Fairchild Hall, 1601 Vattier St., Manhattan, KS 66506 | 785-532-3224 | fax: 785-532-3278 | comply@k-state.edu

Appendix C- Email Example

Good morning,

My name is Brady Wolken. I am a hearing individual that is perusing their master's degree in Park Management and Conservation at Kansas State University. As part of my master's degree pursuit, I have been researching levels of accessibility in environmental education (EE). One specific aspect of accessibility within EE I am interested in researching includes accessibility for individuals that are d/Deaf or hard of hearing. I am trying to accomplish this aim through an online qualitative survey in fall 2024.

I am contacting you to inquire if we can request potential assistance from you, and/or your contacts, to help us 1) through completing the survey and 2) if possible, sharing the survey with adults (18+) that are d/Deaf or hard of hearing. If this sounds interesting to you, I would love the opportunity to discuss this further at a time which is most convenient for you, and all involved.

If this sounds interesting to you the survey link is below!

https://kstate.qualtrics.com/jfe/form/SV_9GoKB7QSfzXvS62

Thank you for everything you do! I hope we can work together in the future!

Appendix D- Infographic Example