The Hub Farm

Environmental Education Engagement in Durham, NC

ENVIRON 245 Spring 2021
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Background

The Hub Farm is a 52-acre farm in north Durham, dedicated to "...improving the academic achievement and well-being of students in Durham Public Schools through experiential outdoor learning" (DPS Hub Farm, 2020). More than an agricultural waypoint, the Hub Farm enables community engagement in core social, environmental, and economic aspects of sustainability. The Hub Farm aims to reach a larger, more diverse student visitor population in Durham's school district. As such, this team's research questions focus on: current demographics of visitors, visitor motivations, barriers for access, and strategies for future engagement (see below).

Outdoor experiential learning has documented benefits, including improvements in participants' leadership skills, critical thinking skills, and care for the environment (Cincero, 2020; Hollweg et. al, 2011; Szczytko, 2018). Enabling the Hub Farm to increase its participation levels is a step towards positively impacting potentially hundreds of school-children in and around Durham.

Figure 1. Hub Farm Plant Giveaway

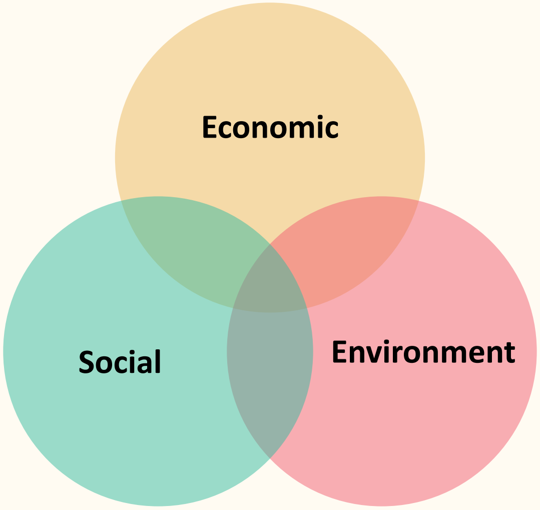
Objective

To expand Hub Farm visitors base by identifying current incentives and obstacles

Research Questions

1	What demographics of visitors engage with the Hub Farm? What demographics of visitors do not come to Hub Farm that staff desire to see?
2	What motivations and incentives exist to visit the farm?
3	What barriers, outside of COVID-19 circumstances, exist to accessing Hub Farm?
4	What strategies can Hub Farm employ to target new demographics and populations?

Approach



Address existing economic barriers and allow for accessible programming for DPS classes in areas such as transportation costs.

Provide outdoor environmental education (EE) experiences for DPS students and other visitor populations, allowing for deeper connections to nature and increased knowledge of sustainable agriculture systems.

Support healthy community relationships through broader volunteer workdays and continue to address issues of diversity and equity by identifying missing visitor populations.

Table 1: Summary of data collection
This methods table shows the data collection and analysis strategies conducted for each group that was reached out to. Capital letters in the data source column by an interview refer to a specific interviewee. These capital letters are used to maintain anonymity.

Perspective	Data Source	Purpose	Process
DPS Parents	Survey Interview O	Investigate what draws/discourages parents from supporting or bringing their children to the Farm; Understand parents' favorability toward EE	Posted Qualtrics survey on DPS Parents Facebook page Conducted 1 semi-structured interview with a parent who frequently attends the farm
Hub Farm Staff	Interviews H, I, R, Y	Gain anecdotal data and staff perceptions on motivations/challenges for populations that do and do not engage; ascertain current activities to engage visitors	Conducted 1 semi-structured individual interview (Y); 1 semi-structured group interview (H, I, R)
Hub Farm Data	Visitor data Spreadsheets	Identify recorded visitor populations attending the farm	Graphed exploratory data using Microsoft Excel
Comparable Farms	Reports, websites, marketing materials, social media	Identify best practices to inform Hub Farm's visitor engagement and marketing strategies	Analyzed 2 farms based on client's recommendation, and 1 public messaging guide on Environmental Education
DPS School Teachers	Interview A Interview C Interview E (former)	Understand teachers' priorities when designing lesson plans and existing incentives/barriers to bringing classes to Hub Farm	Conducted 3 semi-structured individual interviews

Analysis Methods:

Survey: Visualized and analyzed results for descriptive statistics in R-Studio
Interviews and Comparable Farms' Data: Transcribed and qualitatively coded data based on each research question
Hub Farm Data Spreadsheets: Observed visualizations and summarized trends and main findings
Comparable Farms' Data: Created word cloud and comparison diagrams to identify common tactics

Findings

“It’s important to recognize and validate fears and misconceptions some kids may have and work with them to become more comfortable”
– DPS Parent

“Science, math, nutrition! All rolled into one!”
– DPS Parent

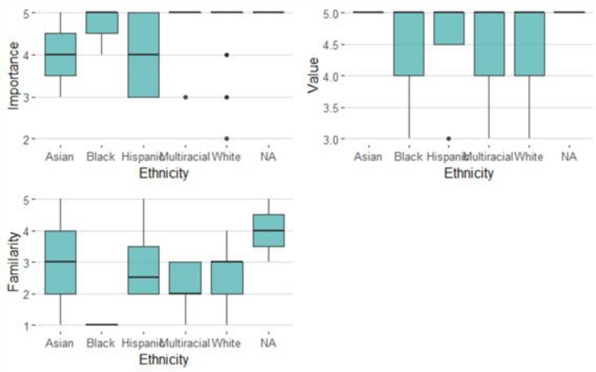


Figure 2 Parents perceptions of outdoor education’s importance, value, and familiarity, by ethnicity

The above graph shows that the average perceived importance and value of outdoor education is very high among all groups of parents, however, the average familiarity level is around 3/5.Parents who are black shows a larger difference in terms of their perceived importance and actual familiarity with outdoor education. The horizontal line represents median score, the whisker points out min and max reported score, and dots represent outliers.

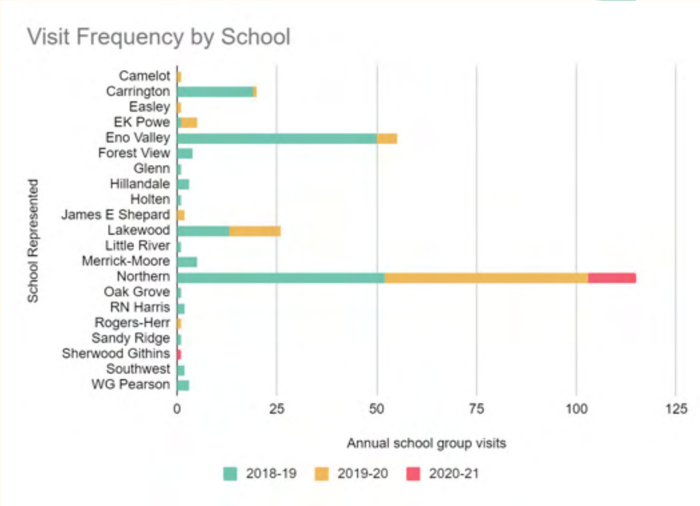


Figure 3. School Visit Frequency From Hub Farm Provided Data

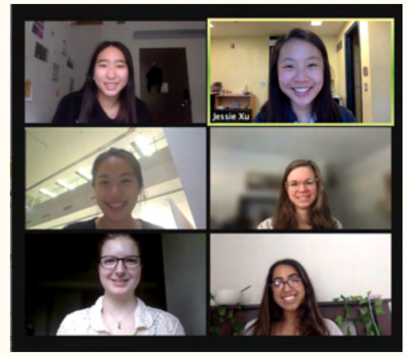
The above graph shows each visitor school’s engagement levels for 2018-19, 2019-20, and 2020-21. Visualizing the schools that attend the most and those that have attended irregularly contextualizes the demographics of school visitor groups (RQ1).

Research Questions	Main findings
RQ1: Visitor Demographics	**Visitors who do come:** - Most common: Schools closest to farm and Lakewood Montessori. See Figure 2. - Elementary schools visit most frequently in-person; during virtual programming (2020-21), synchronous virtual programming mostly engaged high school students and asynchronous programming primarily engaged elementary school students - Most visitors, from schools closest to the farm, are 5th-graders (i.e. pipeline through district-recommended Ecobloom field trip) - Visitor types: teachers, students, and other community members
	Visitors who do not come: - Fewer middle school students compared to elementary and high school students visit - Middle school students engage less in asynchronous virtual programming designed for younger students (i.e. Youtube content)
RQ2: Motivations to Visiting	**Parents and Students:** - 66% of survey respondents (DPS parents) think outdoor education is important. 76% of DPS parents think field trips to Hub Farm would provide their children’s education positive value - Most mentioned motivations on DPS parent survey: (1) students “connecting with nature”; (2) expanding child’s educations - Students benefit from (1) hands-on, novel experiences; (2) quiet time for mindfulness
	Teachers and School Administrators: - EE benefits: increased test scores, student autonomy and empowerment, and more engaged teaching - Responsive, flexible, and engaging staff, especially when teachers have ideas for co-planning curriculum with the farm - Fulfills NC educational requirements - Regular, frequent visits develops a positive school culture (i.e. students get excited about each visit) - Outdoor space available for teachers to support greater interest post-COVID for outdoor education
RQ3: Barriers to Visiting	**Internal Barriers within Hub Farm’s control:** - Most common complaint is insufficient support in curriculum planning. Attending the farm is effort and time-costly for teachers, who must (1) redesign lesson plans to incorporate outdoor education, and (2) accompany students on field trips. - Lack of awareness; only 8% of survey respondents (DPS parents) were familiar with outdoor education -Staff focus on Career and Technical Education (CTE) students decreases availability for non-CTE students - Lack of racial diversity in employees and volunteers; all staff and a majority of volunteers are white (reported by staff) - Some teachers who visited Hub Farm in its early years had negative impressions
	External Barriers to Hub Farm’s control: - Survey results find parents are most concerned about (1) safety, (2) ensuring high-quality, engaging instruction outdoors - Teachers are concerned about meaningful farm visits (“Will it be frequent enough to be meaningful?”) - Transportation can be costly and tedious to arrange; distance can be time-prohibitive for schools further from the farm - Time barrier (ex. Parents who work 2 jobs have less time to bring their children to the farm)
RQ4: Current Strategies to Engage New Visitors	- Take advantage of virtual experiences to engage classrooms - Continue initiatives like “Educate the Educator,” where teachers learn techniques to use the farm’s open space for lessons - Renovate website for visual appeal, clarity of programming, and promoting EE benefits - Have DPS take on larger role in advertising the Hub Farm to their faculty

Conclusions and Recommendations

RQ #1 **RQ #2** **RQ #3** **RQ#4**

Student engagement is highest among **5th graders**, which is driven by the Ecobloom field trip, recommended for this grade level. Student visitors are mostly from **schools closest to farm**, especially those within walking distance, and including schools with a shorter drive time. In aggregate, **middle school students visit the least**. For visitors that continue to engage, stated motivations include **new experiences** for students, the **welcoming and helpful environment** Hub Farm staff have formed, and acknowledged **mental health and academic benefits** from engaging in environmental education. Two major barriers are **insufficient teacher support** and **transportation**. **Support systems** for teachers to engage with the farm and teachers interested in environmental education are needed. District-wide transportation realities also **restrict the flexibility of field trips** for schools outside of walking distance. Moving forward, we have the following **recommendations** that Hub Farm can address in order to improve engagement with new demographics:



The Hub Farm Project Team

Programming Recommendations

- ➢ Hub Farm staff work with teachers to prepare pre- and post-visit lesson plans that can take place at the schools to complement curriculum taught at the farm (similar to farm-to-table cooking classes at Northern)
- ➢ Expanded virtual programming continuing post-COVID. Synchronous or asynchronous lessons to help with the distance/travel barriers for some schools (i.e. “Facetime the Farmer” at Great Kids Farm)
- ➢ “Educating the educator” programs for teachers to lead Hub Farm activities at their school sites, fitting in well as schools embrace the demand for outdoor education post-COVID
- ➢ Hosting multicultural events that invites students, parents, and community members (i.e. African American Foodways Summit at Great Kids Farm)

Marketing Recommendations

- ➢ Incorporating more EE benefits/explicitly mentioned benefits/testimonials into these platforms
- ➢ Coordination more with DPS in publicizing to their teachers
- ➢ Emphasizing the things Hub Farm has improved on over time (infrastructure, etc)

Limitations and Future Research

- ❖ Visitation data did not identify student grades, demographics in terms of race and ethnicity, activities participated, and whether visitors are recurrent or one-time attendees. Survey responses may be affected by self-selection bias and small sample-size.
- ❖ Expand the research scope and extent by conducting further research with visitors who have not engaged with Hub Farm, who have heard of Hub Farm but chosen not to engage, who are of minority background (i.e. Black, Latinx, low-income, etc.), or who had engaged but did not continue to engage.
- ❖ Develop marketing guides based on best practices from comparable farms.

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