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Ann Arbor Public Schools' Environmental Nursery Business Model

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Executive Summary

The Freeman Environmental Education Center (FEEC), the environmental education campus of Ann Arbor Public Schools (AAPS), will operate a native plant nursery as part of its mission to promote environmental stewardship among students and the community. Established with the support of Ann Arbor Public Schools, FEEC resides on a 40-acre property dedicated to environmental education, providing numerous hands-on learning opportunities for students.

In 2023, funding enabled the construction of an outdoor nursery to produce native plants for future restoration projects and educational activities. The nursery will support the FEEC's mission by fostering environmental awareness, practical skills, and a connection to nature among students. Planned activities include seed collection, propagation, and planting, with an emphasis on sustainability and ecological restoration.

The nursery will engage students through various programs, such as field trips, summer camps, and the Freeman Environmental Youth Council. Students will participate in planting, maintaining, and harvesting plants, which will teach them valuable skills in environmental science and horticulture. The nursery will also provide plants for use across the school district, enhancing green spaces and supporting curriculum-based ecological studies.

The nursery is anticipated to benefit students and the community by improving air quality, providing wildlife habitats, and contributing to local climate resilience. It will strengthen community connections through student engagement and public involvement in environmental restoration, creating sustainable green spaces that enhance well-being and help reduce urban heat effects.

The business model we have delivered provides a roadmap for the nursery's development and sustainability. It details strategies for engaging students, securing funding, managing nursery operations, and establishing partnerships. By providing a structured approach to cultivating and using native plants, this model will help FEEC maximize its educational impact and ensure the nursery's long-term success.

Introduction and Background

The Freeman Environmental Education Center's (FEEC) native plant nursery project brings together environmental education, ecological restoration, and community engagement in an interdisciplinary approach to sustainability. Developed with support from Ann Arbor Public Schools, the nursery is situated on a 40-acre site dedicated to environmental stewardship, providing hands-on opportunities for students to learn about local ecosystems through seed collection, plant propagation, and sustainable landscaping. This initiative aligns with the FEEC's mission to foster responsible environmental behavior and empower students with the skills and knowledge to protect natural resources for the future.

The nursery project addresses several specific environmental and social issues identified within the FEEC framework, including the need for increased green spaces, urban reforestation, and accessible environmental education opportunities. Ann Arbor Public Schools, which manages over 30 sites, stands to benefit from the nursery's native plants, as they reduce urban heat, improve air quality, and provide habitats for local wildlife – all while enhancing the aesthetics and functionality of outdoor school environments. Native plant species, chosen to thrive in the Michigan climate, support local ecosystems more effectively than non-native species, offering significant environmental benefits. The FEEC nursery will focus on growing these native species to reduce the cost of landscaping within the district, minimize transplant shock by providing locally acclimatized plants, and foster a more resilient urban forest.

A core feature of the nursery project is its potential to engage students in active, experiential learning across multiple grade levels. Programs such as field trips, summer camps, and involvement in the Freeman Environmental Youth Council provide opportunities for students to participate in hands-on learning activities that cover topics such as plant biology, restoration ecology, and sustainable land management. Students will engage in practical tasks such as seed harvesting, plant propagation, and environmental monitoring, which encourage a deeper understanding of ecological principles and sustainable practices. Research underscores the value of experiential learning in fostering environmental awareness and literacy, and the FEEC's programs align with this evidence by prioritizing direct engagement with nature and practical skill development.

The FEEC nursery project addresses the growing disconnection between urban residents and natural environments by providing accessible green spaces and involving the community in sustainability efforts. As a local educational resource, the nursery will support Ann Arbor's efforts to mitigate environmental challenges such as climate change and biodiversity loss by creating a sustainable supply of plants for district-wide restoration projects. By doing so, the nursery will establish itself as a model for interdisciplinary sustainability education and environmental stewardship within the community, aligning closely with the goals set out in the

FEEC business plan to empower youth, build stronger communities, and create greener urban spaces.

Methods

To develop the business model for the Freeman Environmental Education Center's (FEEC) native plant nursery, our team employed a systematic approach. We began with a site visit to the FEEC to understand the physical layout, community context, and environmental goals of the project. This was followed by interviews with key stakeholders, including Jeremy Moghtader (UM Campus Farm Program Manager), Liz Glynn (Children's Program Coordinator at Matthaei Botanical Gardens), and Marion (AmeriCorps Intern at FEEC). These discussions provided valuable insights into different factors that contributed to our project, including sustainable agricultural practices, ecological restoration, and operational challenges. These factors helped us identify four primary research areas: nursery ecology, nursery economics, model nurseries, and laws and regulations. Over several weeks, we conducted a thorough literature review and researched online, analyzing academic research, government guidelines, and case studies of similar nurseries. This helped us contextualize best practices for seed propagation, financial planning, and compliance with legal requirements within Ann Arbor's unique ecological and social landscape.

Using this research, we collaboratively developed and iteratively refined a nine-section business model, with each team member contributing to specific areas based on our identified focus. The model integrated ecological principles, financial sustainability, and community engagement strategies, ensuring alignment with the FEEC's mission. To validate our findings, we cross-referenced them with data from similar projects, ensuring our recommendations were both actionable and replicable. This process resulted in a detailed plan that not only supports the nursery's operational goals but also enhances its role as a resource for environmental education and ecological restoration.

Deliverables

Our final deliverable was a business plan with thirty-six pages and ten sections.

- **Background**: Delineates the history of the Freeman Environmental Education Center and how the plant nursery got its start as the personal project of Coert Ambrosino, an environmental educator at FEEC.
- **Business Case**: States the mission and vision of the nursery as well as the social, economic, and environmental benefits of a local nursery with all native plants.

- **Student Engagement**: Student engagement directly ties into how much funding the nursery receives as funds are prioritized for projects with more educational opportunities. The section describes FEEC's environmental education objectives, and the benefits of natural connection for kids in addition to general, current, and developing educational opportunities surrounding the nursery. Examples of current educational opportunities include the second grade Plant Communities Field Trip, the A2 Nature Guardians Summer Program, and the high school Freeman Environmental Youth Council. Developing opportunities mostly center around a Natural Resources Career and Technical Education (CTE) Program which would allow for a dedicated CTE instructor and high school students to work on the nursery daily.
- **Location & Site**: Defines the location characteristics, potential barriers to expansion, and a site assessment.
- **Ecology & Production**: Outlines procedures for seed processing, seed storage, propagation, and overwintering of plants.
- **Annual Schedule**: A chart showing the respective plant and logistical tasks necessary to complete each month including seed harvesting, fertilization, transplanting, inventory, grant deadlines, etc.
- **Financial Plan**: A comprehensive framework for the financial durability of the nursery. It includes a description of the Green Revolving Fund that would sustain the nursery, sources of revenue, and a budget with revenue forecasts, cost forecasts, profit & loss statements, and cash flow projections. It also includes possible grants to apply for, current staff, sources of volunteers, and outreach, recruitment, and retainment ideas.
- **Laws & Regulations**: Summarizes applicable laws, logistics of a nursery license, and steps for registering as a nursery vs a business vs a nonprofit.
- **Conclusion**: Reiterates the purpose and importance of the business plan and the nursery.
- **Appendix**: Five total appendices including a spreadsheet of flowering garden plants to consider for sale, financial plan assumptions, laws & regulations references, other nursery models to reference, and a list of additional resources.

This final deliverable will be kept on hand at the Freeman Environmental Education Center to be utilized by staff, students, and volunteers working on the nursery. The document will also serve to strengthen the case for the project as a viable investment for AAPS now and in the future.

Recommendations

The business model is designed to be a living document that evolves with the nursery, which is currently in its very early stages. Moving forward, the largest opportunities for future development of the plan are in the student engagement and financial plan sections.

1. Continue Developing Student Engagement Opportunities

The student engagement section currently outlines three current educational opportunities: the second grade Plant Communities field trip, the 8 - 11 year old A2 Nature Guardians Summer Program, and the high school Freeman Environmental Youth Council. As the nursery draws in more students and funding for FEEC, hopefully, these opportunities will expand and can be added to the list of "Developing Educational Opportunities."

2. Update Budget and Financial Plan as Needed

As the nursery expands, the financial plan should also adjust to account for more realistic numbers. Once the nursery starts producing more plant material, distributing it across districts, applying for grants, fundraising, etc. the budget should be adjusted to reflect the amount of money the nursery is actually bringing in and spending. However, the business model strikes a balance between aspiration and practicality, meaning that projected numbers may be adjusted but should not be underestimated.

Impact

As the nursery grows, the business plan will fortify its development by keeping logistical tasks and deadlines in one location. The biggest hindrances to nursery expansion are a lack of knowledge of regulations, a lack of people power, and a lack of financial resources. The business model clarifies relevant laws, offers sources for volunteers/people-power, and outlines sources of revenue. This will all help the nursery expand quickly in a short amount of time. Further, the nursery will offer quick and easy access to native plant material for AAPS. If schools across the district want to enhance their green spaces they can acquire plants without having to worry about transporting distant material, finding specific species, or connecting to a professional nursery. This will also reduce associated costs and emissions associated with transportation while simplifying the process of purchasing plant material.

The long-term impact of the business model will be much greater. As the nursery becomes better established it will bolster FEEC's mission to serve as an environmental education hub for Ann Arbor Public Schools. The nursery will enhance time spent in the classroom by offering opportunities for hands-on learning including harvesting seeds, fostering seedlings, planting gardens, plant/wildlife identification, proper tool use, practicing environmental monitoring

techniques, etc. On a broader level, this will encourage environmental stewardship from a young age and encourage the next generation of AAPS students to act with a sense of ecological responsibility.

As the plant material begins to make its way across the school district other social, economic, and environmental benefits will arise. Notable social benefits include the proven mental and physical health benefits of green spaces, the associated reduction in violence and crime rates, schoolyard plants connecting kids to nature, and an overarching participatory process that will build a stronger community. Economic benefits consist of increased property value, a reduction in cooling costs provided by tree shade and evapotranspiration, and minimization of unsuccessful plantings as plants will already be adapted to the local climate. There are also numerous environmental benefits such as slowing climate change, minimizing noise pollution, and providing additional native wildlife habitat. Most vital in the context of a school is improved air quality as trees absorb emissions from idling cars and buses. Moreover, the FEEC Nursery specifically comes with benefits such as native plants, a consistent supply, locally acclimatized plants with reduced risk of transplant shock, species by request, and local educational and environmental opportunities.

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