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STUDENT SHOWCASE

The Case for Agricultural Education in Urban Schools

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Abstract

This student showcase essay explores how researching the city informs learning about the city. In it, I examine my senior thesis project for the urban studies program at Barnard College, in which I argue for the use of container farms to expand urban agricultural education opportunities in career and technical education settings. I review my research process, results, and the argument I developed about Perkins Act funding being essential to such programs. Through my commentary, I demonstrate how completing an urban-focused thesis can change students' perceptions of the urban built environment.

Keywords: agricultural education; container farms; career and technical education; Perkins Act; senior thesis

Introduction

New York City has no shortage of parks or greenspace. When I first moved to New York for college, I was immediately drawn to these oases in the middle of this "concrete jungle." It is hard to not notice the presence of parks in New York. Since my freshman year, however, I've come to appreciate a new layer of greenery in the city – agriculture. As I walk by previously unnoticed community gardens, I stop to read the signs on their fences, learning more about what grows there and who grows it. I look at planters left out on Barnard's campus with infographics describing what edible plant is growing in them. I see rooftop gardens and green houses. These features have collectively influenced how I perceive New York City. They have enabled me to reimagine food production and the idea that finding locally-sourced produce in an urban area can be as simple as looking at my surroundings more critically. These observations did not occur all at once and largely happened in concurrence with my senior thesis project at Barnard College, which focused on urban agricultural education. This essay reviews my thesis research while investigating how writing an urban thesis can inform one's learning of the city.

Background: Laying the Groundwork for an Urban Thesis

The summer before my senior year, while brainstorming ideas for my thesis, I considered my interests in education, municipal government, and public transportation, unsure how to proceed with any of those broad subjects. I looked back at previous coursework and projects that I had

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worked on, thinking about which ones I had been most excited by. Most of these projects were related to education inequality, but during my sophomore year, I researched community fridges and food aid in Boston for my Geographic Information System (GIS) class. I loved working on that project because I was passionate about food access and equity, an interest that started in high school when I helped facilitate regular donations to a food pantry from my school's farm. I went to a public school in Boston that had won a container farm through a grant in 2013. Container farms are renovated shipping containers capable of growing 2.5 acres worth of food annually through vertical and hydroponic farming techniques. My high school had purchased the farm as part of a grant to connect urban students to agriculture. I eventually realized that I could combine my interests in education and food equity by studying the use of these farms in schools. I found that looking at prior interests and experiences was key to driving my research. Because my thesis was derived from topics that I already found familiar and interesting, I felt that my research was fueled by a desire to know as much as possible about the topic, and in doing so, I found myself extremely motivated to pursue my thesis research.

My senior thesis argues for the use of container farms in urban schools to establish agricultural career and technical education (CTE) programs. It presents methods for funding the programs as well as how certification might be achieved. It also offers insights into what challenges a school must overcome with their container farm in order to have a successful program. The seven interviews I conducted represent the perspectives of administrators and teachers as well as a student and a representative from the Freight Farms Company. I arrived at the idea by considering that container farms, and other tools of urban farming, have the potential to greatly increase food production in cities where the built environment greatly limits the ability to grow food through traditional modes of agriculture. The literature on vertical farming supports an increased crop yield (Kaur and Chawla 2021) and suggests that urban farming itself is an expanding industry (Van Gerrewey 2022). I recalled my own involvement in container farming in high school, and I wondered if my high school had a tool like the farm as part of an informal extracurricular activity, were such tools also being used for curricular purposes and career training at other schools? I was simultaneously interested in CTE as an educational pathway that prepares students with technical training and skills for success in future careers. I did not know much about CTE programs and so I began to delve deep into the history of career and technical education in the United States. During my study of primary sources, I discovered there is an intrinsic connection between CTE and agriculture. The Land Grant Acts of the 1860s and 1890s established colleges for agricultural education and subsequently led to the development of agricultural high schools, paving the way for the 1917 Smith-Hughes Act for Vocational Education, a foundational act in technical education and the first example of federal funding for secondary vocational education (Patty 1919). The Smith-Hughes Act set the precedent that vocational education is worthy of federal funding.

This background research on both urban farming and the history of agricultural education lay the groundwork for my subsequent research, which entailed virtual and in-person interviews and site visits. In researching potential sites, I found my perception of cities changing. I learned that Detroit has a number of urban renewal efforts rooted in agriculture, that Chicago has one of the world's largest rooftop farms, and that here in New York, just a few blocks from campus, is a non-

profit specializing in agricultural enrichment opportunities for students. Though I have always appreciated farmers markets and the idea of "locally grown" food, I did not understand the full possibilities of hyper-local produce. I wanted to understand what the pathways to expanding agricultural education in urban areas were. I believe that doing so will help students appreciate all of the agriculture around them in the city, turning them into informed consumers and sustainable thinkers.

Exploring Agriculture in the Curriculum

In my thesis, I looked at the viability of using a container farm as a curricular tool. I identified challenges to setting up a functional farm program. One of the top challenges is management. In order to run a successful farm, there must be a dedicated staff member whose primary job is to oversee the farm. Mountain Vista High School (see Freight Farms 2023) in Colorado has had a container farm since 2017. Under the management of one teacher, it has turned into a profitable farm that is used in conjunction with an agribusiness course offered by the school, demonstrating that a farm can successfully be integrated into the curriculum at a school and is a sustainable investment over time.

The other primary challenge to setting up a container farm is funding. Many schools have funded their farms through grants, but while those grants allow for the initial cost of obtaining a farm, the farms have maintenance and other costs associated with running them, such as supplies. I wondered how career and technical education programs were funded and, if a program could be created around a container farm, how such a program could then be funded. My research led me to the 1984 Carl D. Perkins Act for Vocational Education. The Perkins Act aimed to increase the labor force through strengthening vocational education programs. It has since been renewed four times, with the latest renewal in 2018. The Act is a bipartisan effort and has kept up with changing theories of pedagogy, resulting in the current emphasis on the integration of academics and career training. The Perkins Act provides funding for career and technical education programs in the US and in reading about it, I realized it held the key to my research as a way to fund the expansion of urban agricultural education through the use of container farms.

In subsequent interviews of administrators at urban agricultural CTE schools, I focused some of my questions on the Perkins Act. My research suggested that Perkins funding was used to purchase major equipment, such as tractors, as well as to hire staff like veterinarians. Teacher salaries were paid by the school district, just like any other public school. I learned that to receive Perkins funding, a school had to have a certified CTE program. The requirements for certification did seem to vary slightly by district, but both required an industry-vetted curriculum, work-based learning, a student skill assessment, and financial management. Securing Perkins funding is essential to the posterity of urban agricultural education as these programs can be very expensive to maintain otherwise. Therefore, ensuring a program can meet CTE certification requirements is a necessary step to expanding such programs through container farms. Due to the costs of purchasing and maintaining a container farm, Perkins funding is crucial to the viability of such farms in CTE programs.

I began my research with the expectation that schools purchasing container farms would be eager to use them in classrooms. In interviewing the nutrition teacher and farm manager at Montachusett Regional Vocational Technical High School ("Monty Tech"), my assumptions were challenged. Monty Tech purchased their farm through a grant and did not write any curricular components into it. Their farm manager revealed that there were no current plans to use it in conjunction with any official curricula. The goal was to instead use the farm as a source of produce for their culinary program and as a way to give their students access to locally sourced vegetables, aiming to teach students about food mileage and nutrition, but not in any formal capacity.

Monty Tech's lack of interest in incorporating the farm into their curriculum surprised me. In working on my thesis, I learned to challenge assumptions I came in with. I had assumed that urban agricultural education was a rarity due to space constraints and that schools with urban agricultural programs were likely on the smaller side if they existed. I learned that several cities offer complex urban agricultural CTE programs such as John Bowne High School in Queens and W.B. Saul High School in Philadelphia, both of which are public schools. John Bowne has four acres of land on which students in the agriculture program choose between a plant or animal science track and graduate with knowledge of growing food and taking care of animals. John Bowne has a field for larger produce as well as a greenhouse to grow food year-round. They have stables with horses and a coop with dozens of egg-laying hens. In visiting John Bowne, I realized that urban farming is very much possible using traditional farming methods. W.B. Saul High School has 100 acres in the middle of Philadelphia on which they have a flock of sheep and a herd of horses. W.B. Saul is the largest agricultural high school in the country and each of their students studies agriculture through one of four tracks. My assumptions about the urban and possibilities of urban education were challenged by these schools as I realized that just because an idea such as agriculture seems very rural, it is still very much possible in urban schools, even through traditional farming methods.

Conclusion: Reflecting on Urban Learning

My senior thesis reminded me that one is never done learning about urban life. The city is full of surprises. Undertaking a major research project about a niche aspect of cities curated a deeper appreciation for green spaces and locally-sourced produce. It has led me to noticing nature more in my day-to-day life. I learned about different types of urban schools. In doing ethnographic research that led me to visit different parts of New York City, I learned more than any textbook or journal article could have taught me. Just as students at these schools are learning about agricultural science through interactions with plants and animals, I learned more about the city through interacting with it.

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