Demonstrational High School Program for West Mill Creek

Environmental Awareness | Skill Development | College and Career Readiness

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Introduction

The City of Philadelphia and its school system are currently lacking in extracurricular engagement opportunities for its students. This paper presents an outline for a program that will work to fill the gap in environmental awareness, opportunities in Science, Technology, Engineering, and Math (STEM) subjects, and college and career readiness in high school students through education and experiences beyond what is available in school.

The program would start as a demonstrational effort in the West Mill Creek neighborhood to prove the advantages of an after school enrichment program of its type. Parkway West High School is the closest school to the West Mill Creek Playground, which all of our proposals are centered around, so initially, students would come from there. The preliminary length of the demonstration would be five years with each student being enrolled for the three years from fall of their 10th grade year through summer after their 12th grade year of high school. Each semester will be filled with various types of educational content and summers will be an opportunity for students to have a paid internship. A cohort of 20 students would be admitted each year into year 1 of the program. After the first five years, the program would be evaluated and adjustments made as needed to best serve the needs of the students and the community. If the program has been successful, it could expand to include other high schools, have more students, or be adopted at other sites.

Contents

Program Partners

Various community partners would come together to support and build the program. Below are just a few examples of organizations that would be part of this program and how they would contribute.

- Parkway West High School: Students would be accepted into the demonstrational program from this high school. The school would provide support in recruiting students for the program and spreading resources developed by the program and its participants for students at the school.
- Philadelphia Water Department (PWD): The city water department is currently running the Green City, Clean Waters initiative in which they are installing green infrastructure throughout the city. They would be able to teach students about green infrastructure and its use in keeping the sewer from overflowing. The department also runs a variety of

programs that the high school program could take part in, and employees could play a large role in teaching students about potential jobs with the city.

- Netter Center for Community Partnerships: The center connects faculty at the University of Pennsylvania (UPenn) and their students with local high schools[1]. Faculty connections would lead leadership and college programming as well as share their knowledge at relevant workshops. In the past, graduate student participants have served as mentors to students in local schools by setting an example and making college seem like more of a reachable goal[2]. One of the benefits of a partnership with the Netter Center would be the reestablishment of this mentor relationship between UPenn graduate students and students in the West Mill Creek neighborhood.
- Fairmount Water Works Center: The center is part of the education arm of PWD. It runs a variety of education programs, some of which are offered through 12th grade and would be beneficial additions to the curriculum of the program.
- Soak It Up Adoption: This program through PWD provides grant money for maintaining and providing community education about green spaces around the city.[3] It would be a nice way for students in the high school program to learn and then apply skills to a hands-on project.
- Park Lab: This space will serve as an education hub for the West Mill Creek neighborhood. It will have panels of educational material on display in the community that are proposed to cycle to new information every 3 months. One of the ways students in the high school program would share the information they've learned throughout the semester is by creating a display for the park lab space as a group project.

Educational Content

The program will consist of different categories of educational content. Each category involves different knowledge or skill sets, and the combination of lessons and activities in each will make up the basis of the program. Some information or activities can fit in multiple categories, but are assigned to one for organizational purposes. Each category is listed below with a description of what it covers and is followed by examples of topics that would be explored. There are limited examples to allow for adaptation of the program to suit the needs of the students, knowledge of instructors, and asks of internship providers.

Soft Skills: Abilities that allow people to effectively interact in a professional setting. Often referred to as "people skills" or "interpersonal skills."

- Confidence: The program will challenge students at different times and in different subject areas. Students will build confidence early on that will help them persist through any difficulties they come across.
- Teamwork: Students will take part in group projects throughout the semester that will rely on constructive, focused teamwork to be completed effectively. An understanding of

[1] *University-Assisted Community Schools*. Netter Center for Community Partnerships. (2021, April 14). http://www.nettercenter.upenn.edu/what-we-do/programs/university-assisted-community-schools.
[2] Spirn, A. (2021, May 17). personal.
[3] Soak It Up Adoption. (n.d.). https://water.phila.gov/adoption/about/.

proper teamwork will be built early on in the program so students can apply it during semester projects, but also in their professional teams during their summer internships
- Time Management: Students will be asked to balance the demands of school with those of this program. They will need to learn how to effectively manage their time in order to take full advantage of the opportunities presented by each.

Hard Skills: Abilities that can be objectively measured and allow people to perform their jobs[4].
- Geographic Information Systems (GIS): Simply put, GIS is a mapping tool that lets users see the spatial relationship between different kinds of data. It is a useful tool for planners and can be a way for students to understand the natural and built environment around them.
- Python: This computer coding language has become increasingly popular in STEM applications. It is useful for students to know, so they can design and create software.
- Web Design: Websites are a form of communication, but take a fair amount of development before they can be put online. Because websites are such a useful tool, students will be taught how to design them to convey their ideas.
- Computer Aided Design (CAD): There are many different software programs and online options for creating 3D models of things. CAD has many applications in engineering and students can learn to use it to meet their design needs for physical projects.
- Environmental Measurements and Analysis: Students will learn about and work with PWD. Part of the Green City, Clean Waters initiative is surveying the areas in which they are planning on installing the new green infrastructure. Students can learn the process behind these surveys and other chemical, physical, and biological measurement techniques.

Professional Skills: Practices that allow people to secure jobs and conduct themselves effectively during their job.
- Resume Writing: Students will have different levels of experience throughout the program, but will need to convey their personal experience to potential internship providers. They will be taught how to write a resume and properly convey each experience they have had. Enrollment in the program itself is a resume builder.
- Interviewing: Interviews are an important step to secure a job, so students will learn and practice the process of being interviewed. They will learn how to effectively communicate their experience and how to field questions in an impressive manner.
- Email Writing: Emails are an important form of communication in many settings. Students will learn the parts of an email and how to adapt them to different types of audiences.

Workshops: Presentation from a wide range of topics with some based on progressive threads that run through the program. Workshops will provide background knowledge to the work

[4] Doyle, A. (n.d.). *Hard Skills vs. Soft Skills: What's the Difference?* The Balance Careers. https://www.thebalancecareers.com/hard-skills-vs-soft-skills-2063780.

students will do in the summer, teach students about healthy habits or their futures, or provide another relevant, enriching lesson.

- History of Mill Creek: The mill creek has shaped the community that the students will all at least go to school in. Because the program will focus on the west mill creek neighborhood, students will learn about the history of the creek and how it continues to affect the community built on top of it.
- Jobs around PWD: Part of the career development side of the program will be learning about potential jobs. The students will work closely with PWD, so they will hear from current PWD employees about what they do in their jobs and how they got there. This will provide students with some knowledge about what skills they will want to further develop to secure internships with PWD.
- The Importance of Sleep: An often undervalued part of self care as a student is sleep. Sleep impacts physical and mental health, and the ability to concentrate. Students will hear about the short term and long term benefits of getting the recommended hours of sleep to encourage them to develop a healthy sleep schedule.
- College Orientation: There are many different pieces to the college application process including knowing what college is. Students will come with different background knowledge on the types of colleges and how to get there, so workshops will build from a basic understanding of what college is to post-application guidance on picking the proper fitting school.

Experiences: Bringing normally unaffiliated people in, or leaving the classroom to learn from people, places, or things outside of the normal programming.

- Field trips to Green City, Clean Waters sites: Students will be learning about these sites in the classroom, but a visit will allow them to further understand the installation process and the impact of the green stormwater infrastructure sites.
- Guest Speaker from Environment and Sustainability-focused career: Learning about different careers can be a lot more engaging when heard from a person actually working in that job. People from various fields will be invited to the classroom to talk about their jobs, work-life balance, and what they did to get where they are.
- College Visit to Nearby University: There are many different pieces that go into learning about and applying to college. Visits to nearby universities will further conceptualize what it means to go to college and help make it seem like a real possibility.

Skill Application: Projects or programs that allow students to apply the skills they have learned. These take place throughout the program as students learn and hone their skills.

- Soak it Up Adoption: Students would be responsible for maintaining the nearby green spaces and run educational programming about them. Soak it Up Adoption is the program run by PWD that provides grants for engaging with the green spaces, so students could get paid for the amount of work they do.
- StoryMaps: StoryMaps are a tool on one of the GIS programs that lets you write out the story behind the maps you make. Students would be able to apply their GIS skills and tell a story about something they learned in a workshop or discovered through another project. When middle school students in the area were taught GIS before, they created a

map of where parents should stand on the streets around their school so that they could always have an eye on them throughout their walk home[5]. This is just one example of a project that could be done with GIS and communicated with the StoryMaps tool.

Year-Based Progressions

Each year, learning should build on the previous year. The first year should consist of foundational knowledge and start at an introductory level for skill-building. Subsequent years will then take the knowledge and skills to the next level. This section lays out an order for some of the content in the previous section. These progressions are not representative of the whole program for each year, but are a starting point for the program leaders and students to build off of and make their own.

Year 1 (10th grade):

Soft Skills

- Confidence: Students will come into the program at different levels of self-confidence. The program will work to prepare community leaders and in order to be leaders, students should build off of a foundation of confidence.
- Teamwork and Community Building: Each cohort will be learning and working together for the three years they are in the program. It is important that they build a sense of community early on. Developing teamwork skills will help them with projects throughout the semester.

Hard Skills and Application

- Introduction to New Skills: Students are introduced to a new hard skill, as mentioned above, every 2 months so they have time to develop that skill and work on a project with it. Projects can be extended to incorporate skills as they are learned, or stand alone as an application of a single skill.
- Soak it up Adoption: Year 1 students will be taught maintenance practices and begin to apply them. Older students may help mentor them in learning about the space and how to care for it.

Professional Skills

- Interviewing: For many students, the interview for the following summer's internship will be their first. This year, they will get a full introduction to interviewing and the art of crafting the stories of their experience.
- Resume Writing: This may also be the first resume they have to write. The skill development time will go over quality formats for resumes, what all they should put on it, and how to describe the experience they have.

Workshops

- College Orientation: For the introductory year, this workshop will assume no knowledge of colleges or how they work. Multiple workshops will be held throughout the year starting with a broad overview to get college on the students radar if it isn't already there. This introduction will present the importance of extracurricular involvement and good

[5] Spirn, A. (2021, May 17). personal.

grades in the college admissions process. The series for this year will cover types of colleges including liberal arts, STEM, or vocational schools, public or private, and 2-year or 4-year. Students will also learn about financial aid with an emphasis on need-based aid and the possibility of getting full financial aid at an elite university over having to pay for community college.

Experiences

- College Visit: The goal of the visit would be to make the college a tangible place that students can begin to connect themselves with.
- Fairmount Water Works Center School Programs: The center has school programs that will set a foundation for learning for future years of the high school program. The Wondrous World of Water and Who Speaks for the River? Learning from the Past: An Environmental Role Play Activity about Philadelphia in the Industrial Age are introductory programs to the dealings of water throughout time that would provide useful context for working with PWD on other projects[6].

Year 2 (11th Grade):

Soft Skills

- Leadership: As now older students in the program, year 2 students will learn how they can apply leadership skills to their positions in the program. Some lessons will be joint between years and year 2 students will need to use their leadership positions as older students in a productive manner. They will also serve as leaders in their cohort in sharing what they learned during their summer experience.

Hard Skills and Application:

- Introduction to New Skills: There will be some hard skills that students will find useful in their summer internships that were not taught in year 1. Some other skills may have not fit in the year 1 curriculum. Skills from both scenarios can be introduced in year 2 on the same schedule as year 1 with approximately 2 months in between new skills so students are able to create projects around the new skill.
- Advancing Previously Learned Skills: Part of the bimonthly rotation can be an advanced lesson on a skill that was previously learned with the expectation of a higher level project after the further development of the skill.
- Soak it Up Adoption: Year 2 students will be familiar with the maintenance processes used at adopted sites and will be encouraged to mentor year 1 students in their learning as well as propose new uses for the space or updates to maintenance processes.

Professional Skills

- Resume Workshopping: Year 2 students will have their resumes from year 1, but be given space to update them with their new experience over the last year. They will also be encouraged to mentor year 1 students in building theirs.

Workshops

- College Orientation: The lessons about college can progress to being about what students should look for in the colleges they are applying to. Students can start creating

[6] *School Programs*. School Programs – Fairmount Water Works. (n.d.). https://fairmountwaterworks.org/programs/school-programs/.

a list of places they want to research further. They will also learn about scholarships and be encouraged to start applying to them. There are local scholarships given by the universities that don't always go to local students, so they will especially be encouraged to apply to those as the rightful beneficiaries.

- Environmental Justice: After learning about the history of the water in the city in their first year, students will learn about how dealings have shaped the current communities. They will learn about the negative impacts of historical decisions, what is being done to correct them, and what they can do as students to contribute to positive change.

Experiences

- College Visit: The goal of visits in year 2 would shift to exploring the college at a deeper level so students can start to determine what they want in the college they end up attending.
- Fairmount Water Works Center School Programs: The center has a program called Seeing is Believing which gets into the harder science of the water and where students analyze the microscopic life in the river[7]. The year 1 partnership focuses on context building, so the science practice can be left until year 2.

Year 3 (12th Grade):

Soft Skills

- Leadership: Students will now be the oldest currently enrolled in the program and serve as leaders for the other two years. All students will serve as leaders in their community, but year 3 students will be especially encouraged to take active leadership roles in other community programs.
- Public Speaking: This is their final year in the program and then students will be going out into the world as ambassadors for the program and for their communities. They will be engaging their community throughout the program, but in year 3, this skill will be stressed as a life skill and a tool for making change.

Hard Skills and Application

- Introduction to New Skills: If any new skills that haven't been learned come up in year 2 internships, they will be learned in year 3 as appropriate.
- Advancing Previously Learned Skills: Students will have at least an intermediate proficiency level in skills they've been using throughout the program. Skill building time for year 3 students will be used to learn advanced methods for the tools they have learned to use and projects will be more advanced than before.
- Soak it Up Adoption: Year 3 students will be very familiar with the efforts and will lead year 1 and year 2 students. They will also be encouraged to adapt the program and processes as they see helpful.

Professional Skills

- Resume Workshopping: Year 3 students will have their resumes from year 2, but be given space to update them with their new experience over the last year. They will also be encouraged to mentor year 1 and year 2 students in building and updating theirs.

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[7] *School Programs*. School Programs – Fairmount Water Works. (n.d.). https://fairmountwaterworks.org/programs/school-programs/.

Workshops

- College Orientation: Students will be applying to college this year, so college workshops will focus on their applications, scholarship applications, and then once they are admitted, on deciding which college is the right fit for them. They will be reminded of local scholarships meant for their communities and also informed about national scholarships that may lead to full rides to various universities such as the Morehead-Cain Scholarship at the University of North Carolina at Chapel Hill.
- Updating the City Charter: Earlier years will be focused on smaller-scale, community-based processes and efforts. Workshops in year 3 can expand the scope to the city level, such as with a deep dive into the city charter where students are challenged to propose an update or change.

Experiences:

- College Visits: Students will be applying to colleges in the fall, so visits can take place at local institutions where a large portion of students are applying so they can ask any final questions they have. Visits are also valuable for students who aren't applying to that exact college because they can use it to straighten out their priorities for the places they are applying to, and ask general questions about the college experience.
- Career Speaker: Career speakers will happen each year of the program, but students will have more context about what they might want to study in college and can ask targeted questions of the speakers. Speakers will visit all three cohorts at once when possible.

Summer Opportunities (All Years):

Paid Internships:

The most heavily advertised summer opportunity through the program would be a paid internship with a local organization. Students would work in different city departments applying the skills they've learned through their semester programming. They would also work in connection with the other proposals from this class. Some examples of internships are:

- Community Ambassador at the Park Lab: Students work at the Park Lab to answer questions about the current display and run different community engagement efforts. They also work with Park Lab staff to develop future displays and ways to engage the community with them.
- Web Design and Administration for the Park Lab: Initially, the students would be responsible for creating the Park Lab's website and making it accessible to any ability level of user. After the website is designed, interns would be responsible for creating pages for recent displays at the park lab to make the information accessible to a broader audience. As developments happen with the Park Lab, interns would update the website so it conveys the most current information.
- StoryMap Education Intern: Any given summer, various city departments may have an educational program they are trying to develop. An intern with this position could create a story map to fit the educational needs of the time. They would be able to apply their mapping and communication skills from the semester.

- Environmental Surveyor with PWD: Each site of the Green City, Clean Waters program goes through a plethora of environmental tests to make sure the site is ready for development. After an introduction during the semester to the skills used for gathering the correct environmental data for these projects, students could contribute to these projects by performing the analysis at new green stormwater infrastructure sites.
- Policy Intern: After developing a background about how policy is made in the city, students may be interested in a position working on policies at the city level. They could work in a variety of departments and bring what they learn back to the semester program as a workshop.

College Programs:

At peak of this demonstrational program, there will be up to 60 students looking for summer activities. Some students may have other summer programs that they already want to do, and some may be looking for an alternative to an internship. Students will be notified of and encouraged to apply to some college programs, especially those that are free to the student. These college programs will provide a new academic experience to the student and in some cases, the opportunity to live in a new place for all or part of the summer. A good example of such a program is the Minority Introduction to Engineering and Science or MITES program at the Massachusetts Institute of Technology (MIT) which brings rising high school seniors to campus for six weeks during the summer to take five rigorous classes and be mentored by current MIT students[8].

The Philadelphia School District has a listing of college programs at https://www.philasd.org/collegeandcareer/resources/enrichment-summer-programs/.

Other options can be found with an online search for the desired program type.

Weekly Cohort Meeting:

In order for students to feel supported during their internships, each cohort of the program will meet for a weekly check-in. These meetings will be time for reflection about their experiences and a space for students to voice any concerns they have. On occasion, meetings will review a soft skill or professional skill that would be helpful for the group to revisit.

Connection to Other Proposals From Class

Each proposal from this class is based on a key aspect of improving the systems at various levels of the city to better support this neighborhood. Each project is something that would be taught in this program to build the students' awareness of processes in their city that are directly affecting their communities. The city charter, land banks, tangled deeds and heir houses, homeowners resources, and the park lab are all topics of interest that students may be able to build an internship out of during the summer or even during their regular semester.

[8] *MIT Office of Engineering Outreach Programs*. Program details | MIT Office of Engineering Outreach Programs. (n.d.). https://oeop.mit.edu/programs/mites/program-details.