STEM EDUCATION IN WORCESTER: TRACKING COMMUNITY ENGAGEMENT

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STEM Education in Worcester: Tracking Community Engagement

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Report Submitted to:
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This report represents work of WPI undergraduate students submitted to the faculty as evidence of a degree requirement. WPI routinely publishes these reports on its web site without editorial or peer review. For more information about the projects program at WPI, see http://www.wpi.edu/Academics/Projects.
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Lastly, we would like to thank our advisor Professor Laura Roberts for helping us with our report and presentation, in addition to her insight into Collaboratory and how the WPI Community Impact Report data is gathered. Her guidance assisted with shaping our project and forming feasible recommendations.
Abstract

This project was sponsored by the WPI STEM Education Center, which works with current and future PreK-12 educators to assist them with teaching STEM to their students. The focus of our project was to enhance WPI’s system for gathering community engagement data using the software, Collaboratory. We achieved this by analyzing the current system in place for collecting WPI’s volunteer data. Using what we learned we recommended adaptations to the current system as well as developed a map of stakeholders on campus that hold community engagement data. In addition, we developed software for assisting with the import of WPI courses into Collaboratory.
Authorship

Andrew Costas: Andrew Costas served as a facilitator and note-taker for most group meetings and weekly advisor updates. Furthermore, he facilitated various interviews throughout the project and served as a point of contact. He was the main creator of the group’s “Collaboratory Vs. MyWPI” table and contributed to other deliverables such as the team's units' template and stakeholder map. Regarding the team’s final paper, Andrew is the author of the Introduction, Methodology, and Findings sections, and wrote the chapter “STEM Education for Underprivileged Minority Groups”.

ChenHan Guan: ChenHan Guan served as a participant in the group's weekly meetings and sometimes served as a moderator. He was a primary contributor to the formatting and organization of the unit and course templates. Within the team, ChenHan researched dedicated community engagement departments at other universities and created a cover page for the report. Within the report, he was the primary author of the executive summary and the conclusion. In addition, he made contributions to improving the report and was the main author of the table of contents.

Yanbo Hua: Yanbo Hua served as the host for the fifth-week’s sponsor meetings. Throughout the IQP project, he was primarily responsible for the development of the "course data processor" software and contributed to other deliverables such as the team's Units Template. In the final paper, he mainly edited the software section of the Deliverable Chapter, introducing the features and usage of the software.

ZeHai Li: ZeHai Li served as the facilitator for the third week's sponsor meeting, participating actively in the weekly group meetings and recording the meeting materials for follow-up. He was responsible for contacting interviewees and arranging meetings. ZeHai mainly contributed to the background and figure sections of the report, as well as parts of the methodology section and formatting. Additionally, ZeHai assisted in making the Collaboratory template. In the final paper, he worked on the editing process and ensured the document's coherence and accuracy.

Sabina Wilson: Sabina Wilson served as a facilitator for a majority of sponsor meetings and interviews, as well as took notes. She was the main creator of the team’s stakeholder map and contributed to other deliverables such as the “Collaboratory Vs. MyWPI” table and unit’s template. Regarding the team’s final paper, Sabina is the author of the Abstract, Acknowledgments, and Recommendations sections, and wrote the chapter “Importance of ‘Town and Gown’”. Lastly, Sabina worked as an editor for the paper.
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Executive Summary

STEM education is critical for developing problem-solving skills needed to address global challenges. However, educational inequities persist, particularly in lower-income areas. The Worcester Polytechnic Institute (WPI) STEM Education Center supports the Massachusetts Department of Elementary and Secondary Education (DESE) and the Worcester Public School System (WPS) by providing resources and training to PreK-12 educators. This initiative aims to offer equal STEM opportunities to all students, especially those from low-income backgrounds.

The work that WPI’s STEM Education Center performs falls under the category of community engagement work since it involves a university benefiting its community. Unfortunately, WPI does not have an adequate system for tracking such volunteer work, causing much of it to go unnoticed. Our project aimed to enhance WPI’s system for gathering community engagement data using the software Collaboratory. By analyzing the existing system and recommending improvements, we sought to create a more efficient method for tracking volunteer efforts and their impact on the community.

Project Goals and Objectives

The primary objectives of our project included:

1. **Analyze the Current System:** Evaluate the existing methods used by WPI to track community engagement data (mainly a site called “MyWPI”).

2. **Map Stakeholders:** Identify and map key stakeholders on campus involved in community engagement activities.
3. **Recommend Improvements**: Develop and propose enhancements to the current system to ensure an effective integration of the Collaboratory system.

These goals were addressed through comprehensive research, stakeholder interviews, and the development of tools to facilitate data collection and reporting.

**Methods**

Our approach included:

1. **System Analysis**: Conducting interviews with faculty and staff to understand the various methods currently employed for collecting community engagement data.

2. **Stakeholder Mapping**: Utilize the data obtained from the interviews to create a comprehensive map of stakeholders across campus who collect or utilize community engagement data.

3. **Operational Understanding**: Studying the functionalities of MyWPI and Collaboratory to identify their strengths and limitations.

4. **Developing Recommendations**: Proposing specific adaptations, including reformatting existing data templates and developing a software tool for data integration.

**Key Findings**

1. **Fragmented Data Collection**: Various departments collect community engagement data differently, leading to inconsistencies and inefficiencies.

2. **Lack of Centralized Management**: WPI does not have a centralized office dedicated to managing community engagement data, resulting in scattered and overlapping information.
3. **Complexity of Collaboratory:** While robust, Collaboratory’s complexity may deter student usage. Simplifying data entry and employing staff to assist could mitigate this issue.

### Project Recommendations

1. **Enhance the Community Engagement Webpage:** Update current webpages to include information and links to MyWPI and Collaboratory, along with providing clear instructions for students to report their community engagement activities.

2. **Reformat the MyWPI Form:** Align the MyWPI form with Collaboratory requirements to ensure smooth data transfer and improve consistency.

3. **Employ Student Workers for Data Entry:** Hire and train student workers to manage data entry, ensuring efficient and accurate reporting.

4. **Establish a Center for Community Engagement:** Create a centralized office to oversee data collection, manage the Collaboratory database, and coordinate community engagement efforts across the university.

5. **Foster a Culture of Engagement:** Promote the importance of community engagement and data reporting through orientation programs and ongoing training, thus embedding these practices into the WPI community culture.

### Conclusion

Implementing these recommendations will enhance WPI’s ability to track and report on community engagement activities accurately and comprehensively. This will improve internal data management and better showcase WPI’s contributions to the Worcester community.
Establishing a centralized system and fostering a culture of engagement will ensure the long-term success and sustainability of WPI’s community involvement efforts.
1. Introduction

STEM education is a significant and fast-growing area of learning for PreK-12 schools across the country. Our society has a need for problem-solving minds as it searches for answers to the problems posed by a changing climate, dwindling natural resources, and an expanding demand for high-tech skills.

While there are programs across the nation that attempt to engage more PreK-12 students in STEM programs, such as the “Raise the Bar” initiative, implemented by the Biden-Harris administration (Department of Education, 2024), not all schools have the same access to the resources required to run such programs. This is due to school systems not having equal access to resources and finances.

Thankfully, organizations are working to eliminate the educational inequality seen between schools in lower-income neighborhoods, and those in upper-income neighborhoods. One such organization is Worcester Polytechnic Institute’s (WPI’s) STEM Education Center. Their main initiative is to support the Massachusetts Department of Elementary and Secondary Education (DESE), and more specifically, the Worcester Public School System (WPS) through educational resources and training programs.

A report found that of the 20 poorest schools in Massachusetts, two are in Worcester, with their populations consisting of over 97% low-income students (War on Poverty, 2015). The STEM Education Center aims to give students equal opportunities to engage in STEM programs by providing educators with the proper training and resources required to help them succeed in STEM.
The Center holds various events for the professional development of PreK-12 WPS educators. Such events include summer research experiences, where STEM teachers can conduct paid research and therefore gain more experience in the field of STEM, along with various STEM workshops, in which educators can earn a ‘STEM Educator Certificate’ by taking courses intended to help educators prepare to conduct STEM learning experiences. Volunteer work done by the WPI community makes up most of the STEM Education Center’s work. Since the Center is a non-profit organization, these programs are almost entirely run by volunteers recruited from WPI’s student and professor populations.

This work that the STEM Center conducts fall under the category of “community engagement”, as it greatly benefits the Worcester community where WPI resides. Community engagement is an essential aspect of all many Universities including WPI, showcasing the institution’s value and positive impact on Worcester. To better display these connections with the community, WPI has invested in a new system called Collaboratory. Although the Collaboratory system is not yet fully implemented, it holds great potential for displaying community ties, not only for the STEM Education Center, but for all community engaged clubs and groups on campus. To further the implementation of Collaboratory, we worked with the STEM Education Center to research and implement an efficient and user-friendly method for recording community engaged activities within the Collaboratory system.

Through our investigation of the best options for tracking community engagement data, our team discovered the importance that volunteer data holds for the STEM Education Center. This data allows them to map out the impact they are having on the Worcester community. Furthermore, tracking this data allows the Center to see what STEM related community engaged
work is being done by other campus groups not associated with the Center. This helps them get a clear idea of the impact WPI is having on STEM education in the Worcester community, and where their work is needed most. By exploring the current system of volunteer reporting our group aimed to identify the gaps in the current system and how Collaboratory could work in tandem with the current methods to best provide an overview of the WPI communities efforts.
2. Background

2.1 Barriers to Stem Education

STEM education opportunities are proven to assist students throughout several stages of their life. Access to STEM education at ages as young as 5-6 can improve a child’s spatial awareness and mathematical abilities (He et al, 2021). Those who were provided early STEM opportunities are shown to have increased grade point averages and are less likely to drop out of school (Ajayi et al, 2023). Later in life, those who have acquired a degree in a STEM related field often have more job opportunities as well (Xie et al, 2015). In addition, they face less issues with job security than those without a STEM degree, allowing them to have a greater sense of financial security in their life (Xie et al, 2015).

However, there are still roadblocks that prevent students from fully embracing STEM opportunities. Many students that fall under the LQBTQ+ umbrella do not feel welcome within STEM spaces and as such become less likely to continue (Wright et al., 2023). In addition, students that are not given access to high-quality early childcare and education (ECE) will face disparities in STEM performance and achievement compared to children who did receive quality ECE; this disparity is heightened when the student comes from a lower-income background (Bustamante et al, 2023). If a student is not within a school system that has STEM opportunities, or their teachers are unable to provide those opportunities in an accessible manner, they miss out on many of the benefits that come from access to STEM education. Because factors such as income, location, and identity are outside of a student’s control they will have no way to access those opportunities unless they are purposely built for them. Many students that do not pick STEM majors do so because they have a lack of academic preparation, or lack of information
about the value of STEM (Anderson et al., 2023). In this way, training such as the ones that the
STEM Education Center provides can increase an educator’s knowledge of STEM and their
ability to cater to a wider variety of students.

2.2 STEM Education for Underprivileged or Minority Groups

STEM opportunities can also be limited by one’s gender. Historically, there has been a
large gap between the number of males who pursue careers in STEM and the number of females.
In 2011, approximately 9.4 million women were estimated to make up the STEM workforce,
compared to 19.7 million men (Diversity and STEM, 2023). Although the number of women in
STEM-related professions has increased by almost 31% over the last decade (Diversity and
STEM, 2023), the gap between men and women is still quite prevalent with women only making
up 29.2% of the STEM workforce (SWE, 2024). This gap is mainly due to social misperceptions
that engineering and other STEM professions are jobs for men (SWE, 2024). These
misperceptions must be disproven to give all students equal opportunities to engage in STEM
programs. The STEM Education Center is aiding in disproving the misperception that women
cannot succeed in STEM by working in tandem with WPI and its students. In 2021, WPI’s
undergraduate female population consisted of 40% females. (WPI, n.d). This is important
because the STEM Education Center aims to engage more students in STEM, and one of the
ways they do this is by providing the chance for a variety of students to be successful in STEM
programs regardless of their background, ethnicity, or gender. Volunteers can inspire Worcester
Public School System’s (WPS) female students by working with WPI, a university that is
actively disproving the misperception our society has adopted, that women cannot be successful
in STEM.
2.3 Importance of “Town and Gown”

The term “town and gown” is a relationship that exists within college towns between the students and faculty in the college (the gown) and the residents of the area (the town). Although this relationship is intended to be beneficial for both the college and the community it resides in, this connection has not always been mutually beneficial. In fact, at times the towns would often suffer because of the universities (O’Mara et al, 2012). This impact could be seen in the early 2010’s as proximity to universities led to an overall negative trend in housing prices in parts of Wisconsin (Kashian et al, 2013). However, as universities began to expand, they stopped seeing the local government as an adversary and instead began to work with them to create ties between the communities (O’Mara et al, 2012). Many universities work hard to bring a positive impact to the communities they inhabit, being aware of the negative impacts they may have had in the past.

DS

Figure 1

Stem Education in the Community

Schools organize volunteer activities to spread Stem education in the community to develop children's interests.
As universities increase their outreach and strengthen the ties between them and the place they reside, it forms an asset for both the university and the community (Lazzeronie et al, 2015). Universities can get involved with their communities in a variety of ways.

Rhode Island College, for example, spearheaded a state-wide age-friendly initiative by speaking with advocacy organizations for older adults, informing students about the impact of an aging society, and promoting gerontological research. In this way, they cultivated an active learning environment for their students and encouraged older adults to learn new skills and participate in the community (Linson et al, 2019).

WPI itself is also aware of the town and gown relationship and has a variety of outreach programs within the community that try to foster those connections.

Some of the more easily identifiable groups are part of the Worcester Community Project Center, in which students spend a quarter completing a Interactive Qualifying Project (IQP) for a sponsor from the Worcester community, and the STEM Education Center, which focuses on training STEM educators on how they can best support PreK-12 students in the Worcester community.
2.4 Enhancing Community Engagement through Collaboratory and MyWPI Platforms

Introduction to Collaboratory

Collaboratory’s welcome page; a software intended for universities to track their community engagement work.

Collaboratory is an innovative software platform designed to enhance community engagement by providing institutions with a comprehensive understanding of their engagement activities. As a relational database, Collaboratory centralizes data on community engagement and public service activities, focusing on the collaborations between institutions and their communities. This centralized approach enables institutions to systematically track and monitor the specifics of who is involved, what activities are undertaken, where they occur, and their outcomes, thus informing institutional strategies and demonstrating impact. Additionally, Collaboratory serves as a public platform that enhances the visibility of community engagement efforts by publicly sharing data on partnerships, empowering institutions to bring greater
visibility to the work being done with community partners. The platform's real-time reporting capability allows institutions to react and respond promptly to data requests, providing a current portrait of community engagement and public service activities. Furthermore, Collaboratory fosters a robust community of practice by connecting practitioners and scholars from various institutions, promoting the exchange of best practices in community engagement (Collaboratory, n.d.).

Figure 3
Introduction to MyWPI Platforms

MyWPI welcome page.

In addition to Collaboratory, WPI employs another platform, “MyWPI”, to track volunteer work through clubs, events, and organizations. MyWPI is an online resource designed to help students and other community members stay connected, engaged, and informed about opportunities outside the classroom, thus enhancing the co-curricular experience. It allows users
to explore, join, and interact with over 240 clubs and organizations on campus, and provides information on various events and programs available for participation. The platform personalizes information based on individual interests, hobbies, and passions, and manages student involvement throughout their time at WPI. Importantly, MyWPI includes a function that allows students to report their community service hours, ensuring that volunteer work is documented and recognized.

2.6 Conclusion

The exploration of the STEM education landscape highlights the importance of providing STEM opportunities to all. While the STEM Education Center and other WPI groups are performing community engaged work, it is not portrayed well. This lack of transparency means that others are unable to easily get the full picture of what WPI provides to their community. By looking into how volunteer data is tracked, our team will provide a way for interested groups, such as the STEM Education Center, to more adequately report their community engagement related work. As we continue to explore a variety of options on the best ways to collect data, we hope to improve the overall process of reporting community engagement allowing the full scope of WPI’s to work to be recorded and displayed.
3. Methodology

3.1 Introduction

The main focus of our project was to enhance WPI’s system for gathering community engagement data using the software, Collaboratory. We achieved this by analyzing the current system in place for collecting WPI’s volunteer data. In addition, we recommended adaptations to the current system as well as developed a map of stakeholders on campus that hold community engagement data. We also investigated why WPI chose Collaboratory so that we could make the best recommendations moving forward.

When executing our plan, our group kept three main focuses in mind:

1) Analyze WPI’s current system for tracking community engagement

2) Develop a map of all the stakeholders on campus that track or use community engagement data

3) Make recommendations for WPI to consider when adapting the current system

By addressing these specific goals, we aimed to create a more effective system that would benefit WPI and its students. A large portion of our research was dependent on interviews conducted with various faculty members at both WPI and other institutions, along with further literature review.

3.2 Analyze the Current System and Create Stakeholder Map

Our group's first task was to investigate WPI’s current community engagement system and develop a stakeholder map of the campus groups and clubs that utilized it. To do this, our
group held meetings with Kathy Chen, our sponsor and the Director of WPI’s STEM Education Center, seeking information on other key stakeholders she was familiar with. We also researched what other individuals, clubs and campus entities were performing community engagement services through WPI. From here, we held further interviews with several campus faculty members including Christine Ziev, the Director of Student Activities, Dana Harmon, who works for the WPI athletics department, and Gina Havel, the Assistant Director of Financial Aid who works with the federal work study program. These individuals work with many students that participate in community engagement, and part of their jobs is collection or tracking of that data. Because of this, it was essential our team learned about how they collected their community engagement data, and that they be included within our stakeholder map. In total, our team learned of several other campus faculty members who gathered some form of community engagement information. For each individual, we noted their name and contact information, the department they worked for, the type of data they collected, and the system they used to collect it. This gave our group a comprehensive view of the vast number of groups collecting community engagement data on WPI’s campus and where this information was being gathered.

### 3.3 Learning how MyWPI and Collaboratory Operate

Part of creating a smooth transition from WPI’s current data tracking system to the desired Collaboratory system involved understanding how both MyWPI and Collaboratory operated. Our team investigated Collaboratory’s website and analyzed their library of tutorial articles and videos. Additionally, we practiced using the system ourselves, answering questions within the form and taking note of required fields versus optional fields. Secondly, we analyzed the MyWPI site. We looked for where the community engagement form was stored within the
site and took note of what questions were asked. Lastly, our team compared the two forms within a table, so we could visualize the similarities and differences between the two systems and make recommendations for how the overall data collection process could be improved.

Our group also interviewed Sarah Stanlick, an assistant professor working in WPI’s global school, who had previous experience working with Collaboratory. We met with her to learn about what work had already been put towards introducing Collaboratory, and to gain advice on what steps still needed to be taken to ensure the successful implementation of the system.

3.4 Develop and recommend adaptations to the current system

Although our team had come to understand the significance of Collaboratory, it was necessary we considered how it could be implemented without disrupting the process WPI students were familiar with. We interviewed Dr. Amanda Wittman, a teaching professor at WPI who also holds the position of the Director of the Binienda Center for Civic Engagement of Students at Worcester State University (WSU), to learn how other schools in the Worcester community track their community engagement data. We also held interviews with Katie Evans, an employee at Collaboratory whose job is to help institutions implement the system. Katie helped our team understand how the Collaboratory system operated and gave us advice on how other schools had implemented it in the past. Additionally, we held further interviews with Christine Ziev so we could better understand how the current MyWPI system operated.
4. Findings

4.1 Stakeholder Map

Through our research and interviewing process, our team gained insight on the methods that WPI groups and organizations used to track community engagement data. Upon creating a stakeholder map of a dozen departments currently collecting data, our group found three main issues.

The first is that although each organization collects a wide variety of information pertaining to community engagement (including hours and dates worked, or names of community organizations that benefited from their work) no two organizations asked for the exact same information. Rather, each group had their own set of information that they were interested in. We found this to be problematic due to the rigid structure of the Collaboratory system. From our interviews with Katie Evans, we learned that the questions asked through Collaboratory were the same for all universities across the nation, and that editing the form was not possible for a singular school. This meant it would be necessary for the current system in place to be adapted to the Collaboratory system, rather than vice versa.

Secondly, our stakeholder map showed us there is a wide variety of methods used to collect this community engagement data. Many individuals report their data to Christine Ziev’s department using the MyWPI system, while other organizations only gather data for their own internal purposes. Since the data is scattered between many organizations, rather than compiled into one place, it is difficult for an individual to fully understand the community engagement work being done by WPI as a whole. This finding highlighted the importance of having a
singular system for tracking community engagement data. WPI’s lack of unity in their community engagement data collection process stood out even more following our interview with Dr. Amanda Wittman. Given her familiarity with community engagement relations between universities and the city of Worcester, our team contacted her to learn how WSU collected their community engagement related data. Our main takeaway from this meeting was the major differences between how WSU handles their community engagement data, and how WPI handles theirs: although both schools gather community engagement data, only WSU has an entire department dedicated towards compiling it. This further emphasized WPI’s lack of a centralized department for community engagement, as well as suggested its importance.

Our findings regarding WPI’s lack of a centralized system for community engagement led our team to further research how other universities gathered their data. Of the 107 universities we randomly surveyed, 103 have a dedicated department or position focused on compiling this data. WPI is among the four universities that do not.

**Figure 4**

![Graph comparing universities with and without a central community engagement office.]

*Table comparing schools with and without a central community engagement office.*
Furthermore, out of the 8 Universities in the Worcester area specifically, only two do not have a central community engagement office. This demonstrates the importance that most institutions place on having dedicated resources for managing community engagement efforts.

**Figure 5**

![Bar chart showing Universities in Worcester with and without a central community engagement office.]

*Table comparing schools with and without a central community engagement office in Worcester.*

From this data, our team concluded that an essential part of tracking a school’s community engagement data is having a department or team dedicated to facilitating the process, especially when using a sophisticated program such as Collaboratory. Having a central department helps schools standardize the data collection processes across their campus, which minimizes inconsistencies and inaccuracies. This standardization is essential for generating reliable reports and making informed decisions about community engagement initiatives. Additionally, it can help schools avoid data overlaps, ensuring that the information is accurately recorded.
A third issue our group identified is the complexity of the data collection system, which can cause confusion among student volunteers about where to report their community engagement information. This confusion often leads to students either reporting this information to multiple sources, causing an overlap in data, or not report their information at all due to an uncertainty in where it should be recorded. These inaccuracies in data compilation further highlight the necessity for WPI to establish a dedicated department for managing community engagement data.

4.3 Collaboratory and MyWPI

Our team’s analysis of Collaboratory was also essential to informing our group of how WPI’s new system should operate. Initially, our interviews with Kathy Chen revealed her concerns about the complicated nature of the Collaboratory software. Acknowledging that this may deter students from inputting their community-based volunteer work, our group explored the WPI Collaboratory page to learn what was asked of community engaged volunteers. We found that compared to the other data collection systems we had analyzed from our stakeholder map, the Collaboratory form is by far the most thorough, yet also the most complicated. While Collaboratory is intended for community-based volunteer work specifically, it asks for a much wider variety of information such as the target populations affect by the work, what was learned by the volunteer, the expected versus achieved impacts on the community, and much more. Our exploration of Collaboratory revealed some benefits but also some disadvantages. Although the Collaboratory system, if implemented properly, would provide a much more comprehensive view of WPI’s community engagement-based work (rather than simply showing the names of a
volunteer and the hours worked), the time-consuming data entry process may lead to a decline in students reporting their data.

Our research into the Collaboratory system, and our previously stated analysis of the MyWPI system led our team to two important conclusions. First, our research supported that Collaboratory is the best option for WPI’s community engagement data collection system, even given its shortcomings. In order to appropriately showcase WPI’s service to the Worcester community, it is necessary that more information is recorded than simple quantitative data. This system is also beneficial due to the option to make certain required fields optional, thus simplifying the process of entering data. Second, our team decided it would be best for any community engagement information to be inputted by a WPI faculty or staff member on behalf of a student, rather than having each individual student input their own data directly into Collaboratory. Although the Collaboratory system is beneficial to WPI, it is still daunting to students entering their volunteer data. By having a trained staff member enter this information, we can ensure that as much volunteer information as possible is recorded. This process would also require adapting the MyWPI system to mirror the Collaboratory system, since students are already familiar with it. The necessity of having a staff or faculty member for data transfer from MyWPI to Collaboratory further supports our claim that WPI would benefit from having a Community engagement department.

4.4 Deliverables

Throughout our investigation, our team created deliverables aimed to aid us in our research process and serve as tools when considering the best options for an improvement to
WPI’s current community engagement data collection process. This section will also provide further explanations of deliverables mentioned in previous sections.

First, to organize the data stakeholders our team had researched, we created a ‘map’, allowing us to better visualize the desired information associated with each stakeholder.

**Figure 6**

Introduction of Stakeholder Maps

<table>
<thead>
<tr>
<th>Department</th>
<th>Contact Name</th>
<th>Contact Email</th>
<th>Data Sources</th>
<th>Data Collection</th>
<th>Data Stewardship</th>
<th>Data Stewardship Notes</th>
<th>Data Stewardship Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>Faculty</td>
<td>Faculty Member</td>
<td>Faculty: Community Engagement, Class Community Engagement</td>
<td>Faculty: Community Engagement</td>
<td>Faculty: Community Engagement</td>
<td>Faculty: Community Engagement</td>
<td>Faculty: Community Engagement</td>
</tr>
<tr>
<td>All</td>
<td>Faculty</td>
<td>Faculty Member</td>
<td>Faculty: Community Engagement</td>
<td>Faculty: Community Engagement</td>
<td>Faculty: Community Engagement</td>
<td>Faculty: Community Engagement</td>
<td>Faculty: Community Engagement</td>
</tr>
<tr>
<td>Athletics</td>
<td>Ruby Eggen</td>
<td><a href="mailto:rubye@wpi.edu">rubye@wpi.edu</a></td>
<td>Athletics, Dean’s Office, Community Engagement</td>
<td>Athletics, Dean’s Office, Community Engagement</td>
<td>Athletics, Dean’s Office, Community Engagement</td>
<td>Athletics, Dean’s Office, Community Engagement</td>
<td>Athletics, Dean’s Office, Community Engagement</td>
</tr>
</tbody>
</table>

*Image depicting stakeholder map.*

A portion of this stakeholder map is shown above. It includes information such as the department researched along with a faculty member from that department, a classification of the data they collect, the method by which they collect their data, and a suggestion our group considered for how this department could be adapted into the Collaboratory system. This stakeholder map was key in our understanding of how WPI’s current volunteer data collection process operated and revealed its complex nature.

A second deliverable our team produced was a detailed table comparing the currently used MyWPI form to the Collaboratory form.
### Comparison of Collaboratory and MyWPI forms

<table>
<thead>
<tr>
<th>Collaboratory</th>
<th>Current MyWPI</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Does your activity relate to a public issue (y/n)</td>
<td>(1) What Type of Service Hour (Experience/Event)</td>
<td>What Type of Service Hour (Experience/Event)</td>
</tr>
<tr>
<td>(D) Are there mutual benefits for both the institution and external community group (y/n) (can say no)</td>
<td>(4b) Experience type (Community service/Social/Other) (Does not exist if event)</td>
<td>What type of experience/event (Community service/Social/Other)</td>
</tr>
<tr>
<td>(C) Does the activity include an exchange of knowledge (y/n) (can say no)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(B) Does the activity involve an external community group/organization (y/n)</td>
<td>(2) Select or Enter Your Group/club (Non-campus org. / Your group) (Does not exist if event)</td>
<td>Select or Enter Your Group/club (Non-campus org. / Your group)</td>
</tr>
<tr>
<td></td>
<td>(3) Hours (Enter hours)</td>
<td></td>
</tr>
<tr>
<td><strong>(1) Basic Info</strong></td>
<td>(3b) Description (optional) (Does not exist if event)</td>
<td>Description (optional)</td>
</tr>
<tr>
<td>• Activity Title and description (Short Answer)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Image and Website (optional)</td>
<td>(7.8) Ext Reference name/Email (Enter name and email) (Does not exist if event)</td>
<td></td>
</tr>
<tr>
<td>• Primary Contact (Enter name, email, phone)</td>
<td>(4) Start Date</td>
<td></td>
</tr>
<tr>
<td>• Activity Start Date (optional) (Choose Date)</td>
<td>(5b) Start Date</td>
<td></td>
</tr>
<tr>
<td>• Activity End Date (optional)</td>
<td>(6b) End Date (optional) (Does not exist if event)</td>
<td></td>
</tr>
</tbody>
</table>

Table comparing the Collaboratory (left-most column) and MyWPI (middle column) data tracking forms. Recommendations for system improvement (right column) are also shown.

This portion of our table presents the aspects of each form our group considered in our analysis. In summary, we noted the questions asked by each form, whether the question is short-answer or requires a selection, and which questions are optional versus which are required for a submission. Visualizing the differences and similarities between the two systems helped our
team make recommendations as to how the MyWPI form should be altered to mirror the Collaboratory form for an efficient data transfer process. These suggestions can be seen in the third column labeled “recommended.”

Our team’s third deliverable, rather than being a tool for our research, is an essential element to the implementation of Collaboratory. Before volunteers can input their community engagement data, the university must take steps to fully implement the Collaboratory system. First, a university staff must input a set of ‘units’ otherwise referred to as campus clubs, groups and organizations, for students to report under. In order for this to be done correctly, there is a specific Excel template that must be followed when formatting said units. Although WPI had attempted to submit this template to Collaboratory in the past, its formatting was incorrect. To begin the process of correcting this, our team reformatted the previously used template, and added any unaccounted-for units as seen below.

Figure 8
Collaboratory Unit Form

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Office of the President</td>
<td>Unit Type ID: 5</td>
<td>Office of the President</td>
<td>A materials scientist and high</td>
<td><a href="https://www.wpi.edu/offices/president">https://www.wpi.edu/offices/president</a></td>
</tr>
<tr>
<td>2</td>
<td>Office of the Provost</td>
<td>5</td>
<td>Office of the President</td>
<td>Responsible for the overall</td>
<td><a href="https://www.wpi.edu/offices/provost">https://www.wpi.edu/offices/provost</a></td>
</tr>
<tr>
<td>3</td>
<td>Office of Research and Innovation</td>
<td>5</td>
<td>Office of the President</td>
<td>WPI’s growing research</td>
<td><a href="https://www.wpi.edu/research">https://www.wpi.edu/research</a></td>
</tr>
<tr>
<td>4</td>
<td>General Counsel</td>
<td>5</td>
<td>Office of the President</td>
<td>The Office of the General Co</td>
<td><a href="https://www.wpi.edu/offices/general-co">https://www.wpi.edu/offices/general-co</a></td>
</tr>
<tr>
<td>5</td>
<td>Office of University Advancement</td>
<td>5</td>
<td>Office of the President</td>
<td>The Division of University Ad</td>
<td><a href="https://www.wpi.edu/offices/advancement">https://www.wpi.edu/offices/advancement</a></td>
</tr>
<tr>
<td>6</td>
<td>Office of Marketing and Communications</td>
<td>5</td>
<td>Office of the President</td>
<td>The Division of Marketing Co</td>
<td><a href="https://www.wpi.edu/offices/marketing">https://www.wpi.edu/offices/marketing</a></td>
</tr>
<tr>
<td>7</td>
<td>Office of Talent and Inclusion</td>
<td>5</td>
<td>Office of the President</td>
<td>What’s possible? It’s a quest!</td>
<td><a href="https://www.wpi.edu/offices/talent">https://www.wpi.edu/offices/talent</a></td>
</tr>
<tr>
<td>8</td>
<td>Office of Finance and Operations</td>
<td>5</td>
<td>Office of the President</td>
<td>The Division of Finance &amp; Op</td>
<td><a href="https://www.wpi.edu/offices/finance-op">https://www.wpi.edu/offices/finance-op</a></td>
</tr>
<tr>
<td>9</td>
<td>Office of Student Affairs</td>
<td>5</td>
<td>Office of the President</td>
<td>The Dean of Students staff</td>
<td><a href="https://www.wpi.edu/offices/dean-students">https://www.wpi.edu/offices/dean-students</a></td>
</tr>
<tr>
<td>10</td>
<td>School of Arts &amp; Sciences</td>
<td>12</td>
<td>Office of the Provost</td>
<td>The School of Arts &amp; Science</td>
<td><a href="https://www.wpi.edu/academics/arts-sci">https://www.wpi.edu/academics/arts-sci</a></td>
</tr>
<tr>
<td>11</td>
<td>The Business School</td>
<td>12</td>
<td>Office of the Provost</td>
<td>The WPI Business School is</td>
<td><a href="https://www.wpi.edu/academics/business">https://www.wpi.edu/academics/business</a></td>
</tr>
<tr>
<td>12</td>
<td>The Global School</td>
<td>12</td>
<td>Office of the Provost</td>
<td>The Global School embodi</td>
<td><a href="https://www.wpi.edu/academics/global">https://www.wpi.edu/academics/global</a></td>
</tr>
<tr>
<td>13</td>
<td>School of Engineering</td>
<td>12</td>
<td>Office of the Provost</td>
<td>At WPI, students are involve</td>
<td><a href="https://www.wpi.edu/academics/engine">https://www.wpi.edu/academics/engine</a></td>
</tr>
</tbody>
</table>

*Image depicting the formatting for Collaboratory Units*
Additionally, Collaboratory required a similar template of WPI’s classes. Our team was tasked with fixing the formatting of this template as well.

Our team’s fourth deliverable was the design of a software intended to address the incompatibility of course templates between WPI’s course system, Workday, and Collaboratory. Since the course templates downloaded from Workday cannot be directly uploaded to Collaboratory due to differences in their formatting, we designed a software to automatically convert the Workday formatted spreadsheets into a format compatible with Collaboratory. The specific function of this software is to delete unnecessary parts of the Workday data that are not required in the Collaboratory format, and to add parts that are needed in the Collaboratory format. It can also modify certain contents. For example, when inputting the "course level" column, our software can automatically identify whether a course is undergraduate or graduate level based on the course number and add this information to the spreadsheet.

**Figure 9**

**Software for converting courses to Collaboratory**

![Image depicting “Workday to Collaboratory” formatting software]
Using this software is also relatively simple compared to a manual inputting process. When you open the software, an interface image is shown. After this, a user must click "select a file," and a file selection dialog will appear. They can then choose the course template you want to process (only the Excel format is supported), and the software will start processing. When the software indicates that the processing is complete, they can select "save file" to save the file to the specified location. This software makes the entire conversion process much more efficient.

Beginning the process of correctly formatting the Collaboratory templates was a necessary part of spurring the process for the software’s implementation at WPI.
5. Recommendations

Based on our findings, our team has developed several key recommendations for improving WPI's community engagement data collection system, focusing on cost-effectiveness and ease of implementation. These recommendations aim to enhance the use of Collaboratory and enhance the overall process.

5.1 Enhance the Community Engagement Webpage

Our team recommends updating WPI’s Community Engagement webpage to include information and links to both the MyWPI form and the Collaboratory platform. Currently the page only has an outdated link to a federal work study form. Because many students are unaware of how to report their community engagement activities, there are likely gaps in the data collected. By adding easy access to these forms, students will have a clear and straightforward way to report their community engagement activities. This will increase the awareness and usage of the Collaboratory system, allowing WPI community members to add their data and enabling external viewers to see the university’s engagement efforts.

5.2 Reformat the MyWPI Form

Our second recommendation is the reformatting of the current MyWPI form. To facilitate the transition to Collaboratory, we suggest reformatting the existing MyWPI form. This involves ensuring there is a single, unified form for reporting student data and incorporating the fields recommended in our analysis of Collaboratory vs MyWPI table. Our comparison of the two systems provides a guide to help the university seamlessly transfer student-reported data from
MyWPI to Collaboratory. This guide will help increase the efficiency of the data transfer process and improve consistency in data collection.

5.3 Employ Student Workers for Data Entry

Our third recommendation is to hire student workers for data entry and management. Given that Collaboratory does not support automatic data transfer between systems, we recommend hiring student workers to manage this task. These students would be responsible for inputting data from MyWPI into Collaboratory, which is typically done once or twice a year. By employing students on a part-time basis, WPI can ensure efficient data entry without incurring significant costs. The workers should be trained in how to use Collaboratory as well as given an account not tied to a specific student or department to ensure that data is not sorted into the wrong category.

5.4 Establish a Center for Community Engagement

To address the broader challenges identified in our research, we recommend WPI establish a Center for Community Engagement. This center would centralize the collection and dissemination of community engagement data, oversee the management of the Collaboratory database, and supervise the student workers involved in data entry. Additionally, the center could work with university stakeholders to ensure that all community engagement activities are tracked in Collaboratory. Having a centralized department would also allow overarching guidelines to be established on how community engagement data is collected within WPI, which help standardize data collection processes, minimize inconsistencies, and enhance the accuracy and reliability of the data.
5.5 Foster a Culture of Community Engagement and Data Reporting

Finally, we suggest fostering a culture of community engagement and data reporting within the WPI community. If an office of community engagement is established, part of their work could be fostering that culture. This could start during WPI’s new student orientation (NSO) where presenters can highlight the various community engagement opportunities available and emphasize the importance of reporting and how to report this information with new students.

By instilling these practices in new students, WPI could gradually shift the community’s attitude, making reporting second nature to WPI members. In addition, if students are reporting consistently, eventually NSO presenters can shift to telling students to report straight to Collaboratory, allowing WPI to phase out student workers and create a more direct data collection process.
6. Conclusion

The collection of community engagement data at WPI currently spans multiple departments, each utilizing their own methods and systems. This fragmented approach hampers the ability to gain a comprehensive view of the university’s community engagement efforts. By conducting interviews with key stakeholders, we mapped out the existing data collection processes and identified areas for improvement.

Our project provided several deliverables to aid in streamlining the data collection process. These included a detailed stakeholder map and software designed to facilitate the import of course data into Collaboratory. Implementing our recommendations will significantly enhance WPI’s ability to manage and report on its community engagement activities.

By adopting a centralized approach to data collection, WPI can ensure more accurate, consistent, and comprehensive reporting. This will not only improve the internal management of community engagement data but also better showcase WPI’s contributions to the Worcester community.
References


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