Identifying High-Quality Project Themes for the Lyon Project Center

An Interactive Qualifying Project Report

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Abstract

Interactive Qualifying Projects (IQP) are unique to the WPI project-based curriculum. There is no school that provides an experience quite like it. This paper explores the IQPs process and what makes it unique. It also establishes what a successful IQP center entails and the ideal project partner. The research that is conducted for this project will result in recommendations for high-quality project themes for the Lyon center. The research has also identified ideal organizations for project partners and ideas on how to recruit them.

Acknowledgements

Executive Summary

Worcester Polytechnic Institute (WPI) is a private school located in Massachusetts that has a very unique project-based curriculum. If you are a student attending WPI you are expected to complete two projects to complete your degree. One of the projects is the Mastering Qualifying Project (MQP). The MQP has students working together as a team in their respective field of study to complete a common goal. The other project is the Interactive Qualifying Project (IQP). The IQP has students from different disciplines working a project that helps solve a problem to help improve the community. Most IQPs are sponsored by an organization outside of WPI. The IQP can be among many types of projects including humanistic studies, health care and technology, and safety analysis. Another unique aspect of WPI is that they have a Global Experience Office (GEO) that monitors over 50 centers around the world which students can complete the IQP, MQP, or Humanities and Arts (HUA) portion of their degree. Each center is put under the direction of a faculty member at WPI. The purpose of this paper is to explore the importance of the IQP center to their students and the community, what is important to the Lyon community, and to identify a high-quality theme of projects for the Lyon center. The paper outlines the role of the project center director, where should an IQP center be located, what organization make good project partners and how to recruit them, and what makes for a high-quality project. The outcome of this paper will give recommendations for the Lyon project center on a few high-quality project themes to explore.

To accomplish the goal of the paper, I proposed two research question:
1. How project center directors define their roles?
2. What is important to the community of Lyon?

These two questions were proposed after some preliminary background research. During this research, I found that project center directors are a very critical piece to the project center, and that each community will provide different projects based on their location and needs. There were three methods used to answer both research questions. The first was interviewing project center directors. I was able to interview five project center directors. The directors I was able to talk with directed the centers for Hangzhou, The Netherlands, Bangkok, London, Nantucket, Namibia, and Morocco. Two of the five professors directed multiple locations. So, I was able to get a broader view. The second question was answered using archival research into the community of Lyon. I explored in depth two key decision makers within the city of Lyon. The first was Aderly. Aderly is Lyon's government branch for business investments. The second key decision maker is ONLYLYON. ONLYLYON is an organization that was started by Aderly whose purpose is to promote the city of Lyon to the rest of the world. Through both organizations I was able to find many other organizations that were either partnered with or promoted by these two top decision makers.

My research resulted in the following findings. The first is that I was able to describe four key characteristics that make **a successful project center**. They are:
1. Project center directors
2. Ideal location for the center
3. Motivating projects
4. An evolving network of project partners

My next finding explored each characteristic. I explored what some traits that make a **viable project center director**, which are motivation, ability to work with others, and the background they have with the community. Next, I found what makes for an **ideal location for a project center**. The center must be in located in a desirable, safe, and innovative location. Then, I

explain what a **motivating project** means. For projects to be motivating they must be impactful for the community, be beneficial for the project partners and students, and helps them envision their careers with a sense of cultural sensitivity. Lastly, I investigate the **different organizations that can become project partners within a community**. They can be non-profits, government, universities, and for-profits. I also identify ways to recruit these organizations, which are building relationships, word of mouth, websites, local coordinator, and social media.

The findings should all be considered when looking for an engaging project theme for the center. The recommendations I made for the center are the following:

1. Social & human services
2. Economic growth, sustainability, & development
3. Energy & resources

The first recommendation is a good approach for a project theme because it has many nonprofit organizations participate in this theme, is of interest to the current director, and will make for engaging projects. The second is another good approach because the project center is already making highly motivating projects in this theme. The center also has an established network that it should expand upon. The last theme in energy & resources is a theme that they city of Lyon can support and is able to create impactful projects. I am also going to recommend that the center creates their own website, but the center should not hire a local coordinator.

I would like for this project to help the Professor Miller in deciding upon a high-quality project center them. I also would like for students to be able to read my report and expand upon it in the future, whether it is for the Lyon project center or a different project center. Lastly, I would like other center directors to be able to read my report and be able to use it for their own project centers.

Chapter 1: Introduction

What is an IQP? It is not just a collection of characters, but it is an acronym standing for Interactive Qualifying Project. IQPs are very distinctive to Worcester Polytechnic Institute's project-based curriculum. The IQP gives the students of WPI experience in working with an interdisciplinary team to solve a problem. IQPs are not short projects taking a few weeks. It is an extensive project challenging every student to take what they have accomplished through their college career at WPI and apply what they have learned. IQPs are unique and exclusive to WPI. The IQP has students come together with their advisors to help change the community around them. Even though the IQPs are graduation requirements, it is much more than that. It is an experience that cannot be found anywhere else and teaches the student important lessons. Some of the learning outcomes of the IQP are, but not limited to, define clear, achievable goals and objectives for the project, select and implement a sound approach to solving an interdisciplinary problem, and demonstrate the ability to write clearly, critically, and persuasively (Global Projects Program, 2021). The IQP plays a large role in the student's education of both "Theory and Practice". To define the theory, are ideas/hypotheses of trying to solve a problem or puzzle and being able to explain why. Then there is practice, this is the repetition and application of tasks or jobs capable of solving problems, and to remember processes whether it is physical or mental. When combined it allows many opportunities, but the main importance is to find ways to remedy and enhance something requested by an organization or community. There are all sorts of different IQPs. They each have their own focus. The focus on the IQP depends upon the sponsor. The sponsor can be any organization that wants to partner with WPI such as non-government organizations (NGO), university, for-profit, non-profit, or government. The sponsor does not have to be local to WPI or located in the United States.

IQPs are set within communities on a global scale with WPI's Global Experience Office (GEO). There are about 50 project centers overseen by this program. Each project center is under direct supervision of one or multiple professors at WPI. They are the project center directors. The IQP center works to serve their respective communities. For example, Boston is a dynamic city, and the project center adapts to help their sponsor with those changes (Global Projects Program, 2021). For students to be placed in one of these centers they must apply through the GEO, which fits each student to one of the WPI center locations (Global Projects Program, 2021). This model allows students to get exposure to many diverse cultures. At the same time, students get experience with hands-on work within different communities to solve and enhance locations for a seven-week period.

I have been appointed to the Lyon project center. The goal of my IQP is to find a new theme for the Lyon project center. The theme should cater to the needs of the community and helps produce engaging projects that are beneficial to the students and project partners. The Lyon, France project center was founded in 2019 and the center is still in progress of establishing a good foundation. The Lyon center already has a theme economic growth, sustainability, & development. I want to explore different themes to help the project center focus upon what is most important to the community. With the center being newly founded, and two of those three years having been remote work, this has created some roadblocks slowing down the reinforcement's foundation of the Lyon project center. Remote working has also hindered the reputation of the project center in Lyon. A good reputation within the community is necessary for the project center to flourish and be successful. The reputation of the project center can

increase within the community in a few ways. When the students complete their IQP to the standards of WPI and when the projects that are completed are useful to the community. Before I can choose a theme for the project center, I must understand more about project centers, how they operate, and the community that surrounds them. First, I will start with the project center directors and their role in choosing a theme. Second, I will explore the themes of different project centers. Next, I will investigate what is important to a community and the organizations that help meet these needs. Lastly, I will look more into the current theme of Lyon.

Chapter 2: Literature Review

For me to recommend a high-quality project center theme, I must understand all I can about the project center. I should understand what is important for the project center to operate successfully. I should also understand what is important in the surrounding community. I will start with the project center directors and what their roles are within the project center.

2.1 Project Center Director Roles

The project center directors have multiple roles and responsibilities to a project center. First, the project center directors have faculty and student preparation. They work with GEO to recruit suitable students for their project center. They help prepare their students and on occasion the advisor for their off campus IQP experience (IGSD, 2018). Another role of the project center is planning and outreach. The project directors work with the dean faculty, and WPI staff to help ensure the project center is attractive to both students and sponsors. The main responsibility, that I am focusing on, is the project center operations. It is the director's responsibility to maintain a network of current and potential sponsors. They also must collaborate with potential sponsors to develop engaging and suitable projects for the students (IGSD, 2018). There are different ways in which the center director can get in contact with a potential sponsor. One example is the Melbourne project center has their own website. The website has a detailed list of the projects their center has already completed. It also has a page for future partners to understand the process in joining the project center and how to get in contact with the directors (Melbourne Project Center, 2021). Melbourne is not the only project center with its own website. The Washington D.C. and Prague centers also have their own website. Another way they recruit sponsors is by word of mouth. Sponsors that the center works with give recommendations to the center directors on different sponsors they can contact. I started to understand the roles of the center director, but I still do not understand them completely. My research in later chapter will give me a better understanding. I will look into what themes I can find at other project center sites.

2.2 Examples of Themes

There are many project centers that are already established and have a theme to the projects that are conducted in their communities. Many of them have more than one theme. Themes may be similar between IQP centers. There are also themes that are global issues, and every project center has IQPs with goals that reflect these themes. The themes may range from global issues that affect everyone to small issues that deal with the community specifically. I have made a chart, which has 13 divisions of IQPs and each project center, that can be seen in appendix D. The divisions describe each type of project. For instance, there is a division for law and technology. Within the chart, are numbers that indicate how many IQPs I have found completed at the project center and what division they fall under.

How I search for the division is by using the digital WPI website and putting quotations around the entire division title in the search bar. This allowed me to see how many IQPs were completed at each site and when they were completed. I went as far back as 1999.

There are a few limitations to this method. One is that the IQPs were not listed under these divisions until well after the IQPs were already being completed. That is why it only goes as far back as 1999. Another limitation is that many of the papers were uploaded more than once, and there are some centers that no longer exist. So, the Digital WPI may say there are 88 total IQPs completed in a particular division, but when you add all the ones tied to a center you may only

get 57. Lastly, I was only able to review 1,411 when there is over 4000 plus IQPs that have been completed. The most IQPs I have found in one division is the

There are two important takeaways from the table. The first is that you can see that a lot of centers have a concentration in one or two areas, but they also have a few IQPs in other divisions scattered throughout. The other important takeaway is that there are some divisions that every center finds an important area to touch upon. For instance, I was able to find 280 IQPs done in urban and environmental planning, technology and environment has 227, and economic growth, sustainability, & development has 110.What do these types of projects look like and how do they engage their communities?

Urban and environmental planning is a theme that many cities find important, like Cape Town, Africa that has 28 completed IQPs. Other cities like Hong Kong, China find urban and environmental planning important from the 21 IQPs that they have done there. Then, there is London, England. London is a dynamic City like Lyon. When it comes to urban and environmental planning, I have found 40 IQPs that have been completed in London. This is significant because I have found two themes, which London has 40 or more IQPs completed. The first is urban and environmental planning and the second is education in a technological society. If those are what are important to London, then it could mean that a big city like Lyon will have similar interests. One of the IQPs that demonstrates London's interest in urban and environmental planning was completed in 2008 by four students. The goal of the project was to analyze housing occupancy, overcrowding, and resident satisfaction in Brent. Brent is a borough in the northwest part of London. The methods the students used were mail in surveys and door to door interviews. The data gathered from surveys and interviews were entered into a database to analyze the data and discover trends. The results of the IQP showed that the average rental had a household size of about 2.75 persons per home for social rentals and 2.56 persons per home for private rentals. The results also showed that the portion of overcrowded homes was about 27.18%. The IQP identified that overcrowding was a problem in Brent (Heath, 2008). This IQP demonstrates some issues that big cities, such as Lyon and London, have come across. There are other divisions that many IQPs fall under.

Technology and environment is a division that I have found 227 IQPs. While some centers only have done a few, there are a couple that have this topic as a theme. For instance, San Jose has 22 IQPs, Thailand has 20 and Bar Harbor has 21. IQPs that are completed in Bar Harbor, Maine have a main focus on humanities, technology, arts, and environment (*Bar Harbor Project Center,* 2021). Acadia National Park is in Bar Harbor and is a big tourist attraction. It is a big concern for the community to preserve the wildlife, while being able to accommodate people visiting the park. An IQP conducted last summer by five students explored the monitoring of the wildlife in Acadia National Park. The goal of the project was to investigate the feasibility of using cellular webcams to monitor the wildlife. The project's main objectives were to determine the webcams capabilities and limitations, explore locations and placements of webcams, and determine future possibilities and purpose of the webcams. The team tested three different webcam models in the field and made a table on their capabilities. They tested each camera in their ability to capture wildlife, such as deer and rabbits. They made recommendations to the park on what camera to use, how to extend their battery life, and improving upon the connectivity of the camera (Woodruff, 2020). Then, there are divisions that are important to every city but some focus on it more than others.

Economic Growth, sustainability, & development is a division in which there are 110 IQPs. 29 of the 41 project centers have done one or more IQPs concerning economic growth. Of

the 12 centers that have not done economic growth, only two of the centers have more than 7 IQPs completed. This means that 10 project centers have done less than 7 IQPs total because they are newer centers. Since there are 14 divisions, it is understandable that some divisions do not have IQPs that are completed. The data shows that economic growth is important to many cities. Bangkok has eight IQPs completed dealing with economic growth. Namibia has 15 total IQPs dealing with economic growth. This makes sense seeing as how they are a newer country.

One IQP that was done in Namibia was done by a team of four and completed in 2017. The goal of the IQP was to increase the earnings of informal waste collectors by recommending a recycling processing system that added value to their collected material. For their project they interviewed everyone involved with the waste collecting system. Then they used that data along with determining the potential processing materials and the processes that go with it. They also conducted a cost benefit analysis. The team determined that the waste collectors should collect, sort, and shred certain types of plastics that would give the waste collectors the most profit. The team also recommended using certain shredding machines for the waste (Gomarlo, 2017). There are also IQPs that are important to only a couple of cities.

Safety analysis is an issue that is more important to some cities than others. 59 IQPs address safety analysis. The two cities that have a theme dealing with safety analysis are Washington D.C. and Melbourne, Australia. I have found 13 IQPs completed from Melbourne and 18 from Washington D.C. that address safety analysis. That is more than half of the completed IQPs dealing with safety analysis between the two centers. Why does Washington D.C. and Melbourne concern themselves with safety analysis more than other cities? Well in the case of Melbourne, they have a history of bushfires, which can be very dangerous to their citizens. One IQP was done concerning bushfires back in 2010. The IQP team consisted of three students, and they worked with Australasian Fire and Emergency Service Authority Council (AFAC) on the bushfires that were becoming stronger in Australia. Back in the 1990's Australia adopted a "Stay or Go" policy, which encouraged their citizens to either stay and defend their homes from the fires, or to leave early and avoid the bushfires. That policy could no longer be used when in 2009 173 people were killed during a massive bushfire. Since then, Australia has implemented a new Fire Danger Rating Scale (FDRS) and a "Prepare, Act, Survive" policy. The goal of the IQP was to aid in assessing how effective the new FDRS is throughout all the states and territories in Australia. Their research objectives included identifying objectives of each fire brigade, Assessing the implementation of the FDRS and the warning systems, and addressing social implications. After completing their research, the team gave their recommendations to AFAC. Their recommendations were to create and expand bushfire education programs, make changes to the new "Prepare, Act, Survive" policy, and changes to the national and state warning systems (Connick, 2010). IQPs like this one is important to Australia because bushfires happen every year for them. An IQP like this is not useful in a city like Lyon where bushfires are not likely to happen. This IQP helps see how a theme can help make the community better in the area in which it is needed. While safety analysis should be an important topic for just about everyone, not every IQP center has a major focus on it. Then there are other issues that fall under these divisions but should be addressed more directly.

Climate change is a big global issue. I chose to look at climate change because there were many project centers that I came across that had projects with just the title "Climate Change." When you look for an exact phrase in digital WPI for climate change, the search returns 900 IQPs. So, I thought it was an important subject to bring up. There are many ways to address climate change. One project was completed in Copenhagen by a team of four students. The goal

of the project was to generate an argument for the need of a floodwater solution and then to collaborate with residents and experts to identify which strategies best mitigate the damage caused by flooding in the Sjællandsgade corridor of Copenhagen. The team used a cost-benefit and risk-uncertainty analysis. They gathered information on how to solve the floodwater solution by conducting interviews, and by the local response. They also characterized the area for flood points and how it was shaped to better suit their deliverable. The team came up with several recommendations. One was to alter traffic flow (DeCicco, 2013). Climate change will always be an ongoing issue. So, it is understandable why there are as many projects as possible.

Different themes have been established for other project centers. I have done some research on themes that are global and are an issue for each city. One theme being climate change. There are also themes that some cities focus on more than others, such as safety analysis. These themes give a little demonstration on what is important to a city or community. There are other ways to find out what is important to a city or a community.

2.3   What Is Important to a Community

The Huffington Post has an article called "What Factors Make a Great City." The article lists traits that they have found to make a great city. The first trait is culture. The article is not just talking about the big museums that everyone knows and wants to visit. They are also talking about the small locally driven art shows, restaurants, and businesses that make up the entire city. The second trait is the "buy-in." What the article means by the "buy-in" is the amount and diversity of the people who get involved with the city. The next trait is connectedness. The article describes this trait as having the city involved and made aware of what is going on whether it is through social media or word of mouth. The fourth trait is the outdoors. This trait asks the question: do you want to be out in your own city. The last trait is smart spending. Can you go out and have a good time without going bankrupt (HuffPost, 2014)? Some of the IQPs that I researched correspond to these traits. The current IQPs that are happening in Lyon are a good demonstration of the first two traits. Simply Gourmand may not be local to Lyon, but it is a small business that makes up an important piece of culture. SINGA LYON shows the "buy-in" of the city by helping different people within the city of Lyon. Both IQPs will be discussed further in the next section. The Acadia National Park is a good example of the fourth trait too. This IQP deals with the outdoors and preserving wildlife, which improves upon the community. While I think this is a good article, I believe they are missing an important trait. The last idea that makes a city great is responsibility. By this, I mean how the city supports its citizens. Does the city look out for their people well? How well can the city draw the line between control and keeping their people safe and happy? This may be the most important one. The Melbourne Australia IQP that was looked at is a good example. They had a bushfire policy, which was basically saying you can stay and defend your home and we will not intervene until it is time to step in. Once the fires started to be more than the average person could handle, the city had to reevaluate its policy to ensure the safety of its people. These traits that show what makes a great city demonstrates what is important to the city or community. Knowing what makes a great city is not enough. I need to find how they are developed and by whom. There are many organizations that go into making a city, such as government agencies, universities, and nonprofit organizations.

Institutes of higher education are the type of organization I want to discuss first. This is because I am working through WPI. It is good to know what is expected from this organization because of what it provides within Lyon, but also what I should think about what I am providing when completing this IQP. Many professionals have given their input on what a university

should do for their community. Ira Harkavy is the director of the Barbara and Edward Netter Center for Community Partnerships. Ira believes that it is the duty of schools to improve upon the quality of life within their communities. Ira believes this is their most important role because schools have many resources and attract many key actors within a community (Zócalo Public Square, 2012). Nancy Cantor is chancellor at Syracuse University. She believes that all institutions of higher education have a duty to help build a community's civic infrastructure. She believes that these institutions should spur innovation and create opportunities for their communities (Zócalo Public Square, 2012). These are two important roles that institutes of higher education have within their community. Their roles go well beyond what I have mentioned. The reason why I brought up these is because they represent what WPI attempts to accomplish with the IQP. WPI has a bigger scope and attempts to do this in communities across the globe. Institutes of higher education are among many organizations that have a role in their community.

The government is another organization that has many roles within their community. There is an article in the World Economic Forum written by Anne-Marie Slaughter that outlines three roles the government has in their communities. The roles are to protect, provide, and invest in talent. The first role to protect means the government has a responsibility in setting up an army, and police force. They also build jails and protect their citizens from harm (Slaughter, 2017). This responsibility was already demonstrated in Australia with the bushfire IQP. The second role is to provide. The government is responsible for providing goods and services that the average person would not be able to provide themselves. These include ways to transport like roads and bridges, and social services for their citizens that are incapable of providing for themselves like people that go on disability (Slaughter, 2017). I went over an IQP that touched upon this in the previous section in Namibia. Trash collection is a service provided by the government. It is also connected to the outdoors trait for what makes a great city. A good and efficient trash service helps keep the city clean, which is important to any community. The last role is to invest in talent. This does not mean to find a good actor or singer for a show. It means to invest in the education of their citizens. The government has a responsibility to provide education to the children of their community. This is to help develop them into high functioning adults in society (Slaughter, 2017). I did not go over any IQPs that have dealt with education. Although, it can be seen from the chart I created, education is a priority in many communities having 161 IQPs completed. A government body has many roles other than the three that I listed. There are still other roles in the community that need to be met that the government and universities do not find a major priority.

Non-profit organizations also have a role in their respective communities. A study done at the University of Bacau in Romania (Ciucescu, 2009) describes how non-profit organizations identify and solve social issues within a community. The study also discusses how these organizations solve these problems more efficiently and at lower cost than public administrations. The non-profit organizations do not replace the public administration, but they focus on different issues, which makes them both important to a community. One reason why the non-profit organizations can solve issues at a lower cost is the volunteer help they get from the community. Non-profit organizations are also a good source of information for the public to use on many issues, such as what needs to be solved in the community (Ciucescu, 2009). Based on this study we can see how non-profit organizations help improve their community in multiple ways. They have volunteer help, which is the "buy-in" traits discussed earlier. They inform the public on what is happening in their community, and this keeps the community connected. They

also solve many social issues, which other organizations are not equipped to handle, or they have other priorities.

I explored what is important to a city and what organizations help meet these necessities. There are many things that are important to a city and different organizations have different priorities to aid the city in becoming great. These are generic organizations and qualities that I went over. I want to turn my focus to the city of Lyon to explore their wants and needs and to see who plays a role within the city.

2.4   Current Theme of Lyon

Before I start discussing what the current theme of Lyon is, I want to go over the idea of city branding. Cities compete on a global scale to attract talent and visitors. Cities must identify and promote themselves so that people will want to live and work in the city, businesses will want to move to the city, and tourists will want to come visit the city (Riza, 2012). A good example of city Branding would be New York City (NYC). NYC has places that attract business associates to the city, such as Wall Street. NYC also has monuments that attract tourists like Time Square, and The Empire State Building. Lastly, NYC has a good nightlife like the theaters on Broadway, which attracts people to live in the city. Why is city Branding an important topic?

Lyon is a city that has its own brand. Lyon is France's top city for culture and in 2016 it had a population of 2.6 million inhabitants. Lyon also did not have a good global reputation for many years and in 2007 ONLYLYON was established and is now directed by Lionel Flasseur. The goal for ONLYLYON is to:

1. Make Lyon better known.
2. Generate appreciation for Lyon.
3. Bring people to Lyon.

ONLYLYON is managed by seven people including the director, and they work as a liaison between many partners and Aderly. Aderly is Lyon's investment and economic development agency (The Place Brand Observer, 2016). More will be discussed later in the chapter about Aderly and ONLYLYON. Now, I can start discussing what is currently going on with Lyon. I will start with the projects that our center is currently undertaking.

There are three projects in the process that are working with sponsors outside of WPI. The first is SINGA LYON. SINGA LYON is an international NGO that consists of four people in Lyon. They have many partners trying to aid their cause in helping refugees and new arrivals in Lyon (Singa Lyon, 2021). The Lyon center has worked with SINGA once and currently has a project going on with them right now. The goal of the current SINGA project is to create a more inclusive community for newly arrived individuals and refugees. The Rhone River project is another ongoing project for the Lyon project center. This project's goal is to determine if the man-made canal should be restored, or if it is better to let nature take its course and have the river overtake it. The entire project is composed of nine different partners that were put together by Grand Parc Miribel Jonage. Grand Parc Miribel Jonage is an urban park that is located 10 Km east of central Lyon (Grand Parc Miribel Jonage, 2017). The last project is Simply Gourmand. The goal of this project is to aid Simply Gourmand, which is an online store of French expats, in expanding their business and finding a perfect balance between human interaction and technology. This project is not directly related to the community of Lyon, but it is still important. While these projects give us some insight, they do not represent all of what is happening in Lyon. I will look at some outside entities that have a hand in the community of Lyon.

Ausvet is a company based in Australia. They have recently chosen their European headquarters to be in Lyon, France. Ausvet is a global consulting company with many partners all over the world and conducts many projects in human, animal, and plant disease control. The Lyon subsidiary will work alongside Cargill, Heifer International, and the International Poultry Council on a project called Transform. The goal of this project is to combat the threat of infectious diseases and antibiotic resistance to improve human and animal health. This is a five-year-long project also being conducted in different parts of the world (USAID, 2021). These are just some examples of the projects going on in Lyon that are addressing a need. While it is good to get an understanding of what the needs of Lyon have been or currently are, it does not quite help us determine a theme. What will the future needs of Lyon be? How can they be determined? These are some more questions that I need to ask.

I now look at different universities around Lyon. Lyon has about 25 universities. They have many art schools, traditional universities, and some technical schools. INSA is a big tech university in Lyon. They have their own projects and research that they conduct. One such research was conducted by a student there named Fabien Baradel. Fabien attempted to educate algorithms to human gestures This was done to evolve the automatic video analysis and improve upon the safety of individuals. It took Fabien three years of his thesis work to educate the algorithms (Lyon INSA, 2021). Many project themes have to do with technology. Since Lyon is an innovative city and most WPI students study in the STEM fields, it is good to see what technological work is being done in Lyon.

I have laid out background on what an IQP is, what types of projects there are, and some of the key dynamics to a community, such as what they find important and who plays a role. For my project I will have to develop these ideas further. In the next section, I will discuss what I intend to research and how I will do it.

Chapter 3: Methodology

In the previous section, I explored different project centers and their themes, including the current theme of the Lyon project center. I also briefly looked into what is important to a community. In this section, I explore how those two ideas connect to each other, and how it will help me propose new themes for the Lyon project center. I will be addressing two research questions:

1. How do project center directors define their roles and how does this affect the project center theme?

2. What is important to the community of Lyon? This question will give me a better understanding of Lyon and what is unique to the community.

Answering both questions will lead to recommendations of new themes for the Lyon project center. I used three methods to answer these questions. The first method is to interview different project center directors and the Department of Integrative & Global Studies (DIGS) faculty. The second method is to do archival research into what is currently important to the city of Lyon. The last method is my weekly sponsor meetings with Professor Miller. Our weekly meetings have shown me how she views her role as a center director, and she has given me insight to Lyon through her knowledge of the city.

3.1 Research Question 1 - How do project center directors define their roles?

The first research question I will answer is how project center directors define their roles and how does this affect the project center theme. I will do this by using the interview process. The project center director decides what sponsors to choose for projects and what projects to propose, as it was stated in the first section of the literature review (IGSD, 2018). However, not every person is the same. What one center director finds to be an engaging project, another might not. Speaking to different directors about different project sites each with their own themes will give me more of an understanding of how project themes are chosen. The project center directors will be my primary source of data, but a good supplemental source will be the DIGS faculty. The DIGS functions as a gateway for students and their advisors to connect with communities around the globe (Integrative & Global Studies, 2021). These faculty members will be a good source for information because they work with more than one project center and will be able to give a different perspective. I hope they will also be able to give some insight on the themes of project centers, and how they are able to help project center directors with a theme for their centers. I used the following criteria to select the professors that I interviewed.

1. They are the founders of the center.
2. Any centers that have their own website
3. A center director who has been working on global projects for a few years.
4. The center is located in a city similar to Lyon.
5. The center has a local coordinator.
6. The project center has been around for a while with many completed IQPs.

Not all the criteria need to be met for each person. The questions for the interview are in appendix B. I would like to have a minimum of three interviews for project center directors and two for the DIGS faculty members.

3.2 Research Question 2-What is important to the community of Lyon?

The second research question that I will answer is what is important to the community of Lyon. I will do this by conducting archival research. In the previous section, I went over what is

important to cities/communities and what is the current theme of Lyon. Now, I want to take both of those ideas and focus them into this research question. Some places that I will start looking is ONLYLYON and Aderly. They are websites that promote the city. I want to find out a few things while researching these sites. I would also like to see what these sites are saying about what is important to the city itself. Other places that I will be searching are universities, government, and non-profit organizations. I already went over what their roles are in a community. Now, I want to find out what their roles are within Lyon. There are a few ways in which I intend to acquire this information.

3.3   Data Collecting Tools

The data that I will be gathering will start with the interview process. I have built two questionnaires. The first questionnaire is what I will be asking the project center directors. The second questionnaire is what I will be asking the DIGS faculty. I will be taking notes and recording the interview. This way I write down what I think is important and I am also able to go back in case I need clarity on something I missed. The last data gathering tool is the information that is on websites and other sources. The information will be focused on what is important to Lyon. I will take notes from the sites and save links to go back to the website. Once the data is gathered it will be analyzed.

3.4   Data Analysis

There will be a few steps to analyzing the data gathered from interviews and research. The first step will be to look at the questionnaires as a group. In what ways are the answers the project center directors gave similar to each other, and what ways are they different? The DIGS questionnaire will be analyzed in the same way as the project center directors. Then, I will take all the questionnaires and see how they relate to each other. I want to see how the project center directions have similar views to the DIGS faculty and how the views are different. I will be looking for keywords that are among each interview. Next, I want to look at the research. The research should give me an idea of what is important to the city of Lyon. I will see what each data site says is important to the community. I will see if there are any similarities in the information. Then, I want to categorize the needs of the community. Once all the data is analyzed individually, I will then look at them together. What can I take from the questionnaire and from the research and translate it into something for the community of Lyon? There are a few things that I will take into consideration before I start conducting my research. One is the potential obstacles.

3.5   Potential Obstacles

For this project, I will need to interview several professors to obtain a diverse set of perspectives. One potential obstacle I can run into is being able to schedule an interview. I am doing this research during the summer months. There may be some professors on vacation, or they may have other scheduling issues. A solution to this issue is to reach out to more than the minimum number that I had stated earlier. If I get more interviews than what I am expecting, that is more information I can use. Another issue will come from researching the importance of Lyon. Since I am conducting my research in the U.S, I must heavily rely on archival research. I cannot go out into the community and ask their opinion of what their community needs. So, I am relying on the opinions of a few people instead of many. These groups are still well connected and do a good job on representing the city of Lyon and what is important to it. These issues may have an outcome of a lack of data. I will have to work with what data I can gather. I will make sure the data I gather is in an ethical manner.

3.6　Ethical Considerations

None of the questions that I ask will be personal to the interviewees. Also, the research that I do will all be public information. That means that none of the information gathered from research will be sensitive information. For the interviews, I will set each interview up over zoom and conduct them in accordance with each professor's schedule. I want to record the interview, but I must make sure I get permission to record first. I will start the interview by asking permission to record them. If I do not get permission, then I will have to use notes. Once I have made the findings, I will use the data from the interviews to strengthen my findings.

In this section, I discussed the methods I will use to do my research, the data that I want to gather, and how I intend to analyze the data I gather. The next section presents how I analyzed the information and results from my research.

Chapter 4: Findings

The outcome of my research was able to answer both research questions that I proposed in the previous sections. The first research question, what are the roles of the project center directors. This question was answered using the interview process as well as background research and sponsor meeting with the current center director of Lyon. Some of the center director's roles include organizing and setting up engaging and impactful projects for students and project partners, with being an information source for their students, faculty, and project partners, and to handle many of the logistical arrangements for the IQP. The second research question, what is important to Lyon, was answered by using archival research. I mainly researched the key decision makers of Lyon, which are Aderly and ONLYLYON. A more comprehensive and detailed description of the research outcomes can be found in appendix C. Through these results I am able to put together some findings that will help me make recommendations for a high-quality project center theme.

4.1   Finding 1: Criteria for a Successful Project Center.

As I discussed in Appendix C, I gathered opinions from different project center directors about what they thought made a successful project center. I mentioned earlier in the introduction to the literature review that there are specific learning outcomes to an IQP. For a center to be successful, it should consistently achieve each outcome for their students. Based on the outcomes and my interviews with project center director, I have made a list of the top four characteristics of what I believe makes a project center successful:

1. Project center director.
2. Ideal location for the project center.
3. Motivating projects.
4. An evolving network of project partners.

The list starts with the center directors because they are the most important piece. That is based on all five interviews I conducted, including Professor Rudolph calling the project center directors the champions of the center (J. Rudolph, personal communication, July 2, 2021). The second criteria also come from the interviews mostly with professor Vaz and how he thought of project centers from a dean's perspective. The third criteria piece I found important for many reasons including keeping students engaged with a project center. Both Professor Vaz and Professor Moody described how important engaging projects are to the students. Last piece I found important because the project partners are always shifting, and the center directors are always trying to gain more project partners so they can keep offering impactful projects (J. Rudolph, personal communication, July 2, 2021). I explore how to achieve a successful project center in the rest of my findings below.

4.2   Finding 2: What Makes a Good Center Director?

The project center director is easily the most important piece for a successful project center. The center director has a major role in the starting up, development, and maintenance of the project center. Then, the question becomes what makes a good project center director. Through my research I have found a few common traits that I believe help makes a center director successful at their respective project center.

The first is their motivation. Their motivation can come from anywhere. It could be that they are motivated by working with their students and helping them develop. I noticed in my interview with Professor Golding that he strongly cared for his students' development during the IQP process (D. Golding, personal communication, June 22, 2021). They can be motivated by

their work and that they want to help shape a certain community. Sometimes motivation comes from wanting to help broaden the GEO. For instance, Professor Rudolph started the Hangzhou project center because she noticed that WPI presence was lacking in mainland China. She thought that since China is an important country throughout the world not having a center there was a major gap in WPIs project program (J. Rudolph, personal communication, July 2, 2021).

Another trait is how well they work with others. This trait is important because the center directors work with so many people, and they are always building and extending their network of project partners. In my interview with Professor Smith, he discussed how when he discusses a project with his project partners that sometimes they want a more technical outcome. Professor Smith would then ask his project partners to expand the scope of the project so the students are able to think about who their projects will help and what the effects will be (A. Smith, personal communication, June 24, 2021). This shows that sometimes a project partner and a center director might not see eye to eye on a project, but they can discuss it and come up with a project that is beneficial for everyone. They help their project partners, faculty, and students engage in the community around them. Professor Golding described himself as an information source on all matters related to the project centers he directs (D. Golding, personal communication, June 22, 2021). This means that he is working with everyone that has anything to do with the project center including sponsors, housing providers, students, advisors, and GEO administrators.

The last trait is their background with the community. I have found in most of the directors I talked with that they had some sort of background or personal knowledge of their project centers. Professor Moody explained to me that she completed her dissertation in Morocco. So, she had a knowledge of Morocco before she became the co-director for the project center (R. Moody, personal communication, June 23, 2021).

The project center director is the backbone of every IQP center and having these traits help them run the project center successfully. This is important because the projects that are often offered are due to the vision the director has for the project center. Even though they are the most important people for a center to be successful, there are still other aspects to a successful project center.

4.3   Finding 3: What is an Ideal Project Center Location?

A desirable, safe, and innovative are characteristics for an ideal location of a project center. Why does this matter? Well, if it is not a desirable location then it will be hard to attract students to participate in IQPs at that center. For instance, the London project center is a very successful IQP center. The London center does three terms a year because the center is in a high demand from the students (D. Golding, personal communication, June 22, 2021). The location also has to be safe. WPI cannot send students and faculty into a dangerous situation, like the Amazon for seven weeks to complete an IQP (R. Vaz, personal communication, June 16, 2021). Finally, an innovative or developing city makes for a good location for a project center. This is important because an innovative city will have many opportunities to find project partners and new projects. Windhoek, Namibia is a good example of an innovative and developing city. They have many resources including a mining industry just outside the city. They are always looking for ways to conserve energy since they are located in the desert (A. Smith, personal communication, June 24, 2021). The next finding is what organizations within the community are appropriate potential project partners.

4.4   Finding 4: What is an Engaging Project?

What I believe every center director keeps in mind when they are looking for new projects is for the projects to have some sort of impact on the community, and the student must develop

from their experience in some way. The whole purpose of an IQP is to help develop the surrounding community. So, what makes a project impactful? There are ways in which a project can be meaningful and have a great impact. In my discussion with Professor Vaz, he gave a great deal of information on the types of projects he thought were impactful. He discussed how in Washington D.C. they mainly work with government agencies, such as the Smithsonian, and the Patent Trade Office. He said that they are interesting projects, but they do not really connect with the community. He then discussed his time working in Bangkok and described one IQP about students working in the slums improving safety for children. He also thinks projects should be authentic. By authentic, He means that they are of genuine interest to the project partners. He believes those are more impactful and meaningful projects (R. Vaz, personal communication, June 16, 2021). In the interview I had with Professor Moody, she stated how when she looks for projects that she wants them to be impactful for students personally and professionally. She also wants her students to see their roles as engineers and scientists in the projects and to help envision their careers to be culturally sensitive (R. Moody, personal communication, June 23, 2021). This is important to finding a new theme. When the center is able to consistently create projects with motivating topics, this will create the theme. Having motivating projects is critical for a successful project center, but the projects must come from project partners that want to create and work on these engaging projects.

4.5   Finding 5: Identifying Organizations to Sponsor Projects.

To find a high-quality project, the center director must have an evolving network of project partners. The reason why the network must be evolving is because project partners are not always the same every year. Some organizations sponsor one project with WPI and then they do not return for any others. While some will sponsor and then will not sponsor one again for a few years. Many project partners stay for two or three years and then they shift (J. Rudolph, personal communication, July 2, 2021). So, center directors are always looking for new organizations to sponsor projects. A good question to ask is how center directors find these project partners to sponsor projects.

There are many ways that project centers can identify and recruit potential project partners. One way is to develop relationships with project partners. Communicating and meeting with potential project partners are one of the strongest methods. It helps build a trusting connection between the center director and the project partner. The Hangzhou center relies on this a lot mainly because of the culture in China. Professor Rudolph even said that it took two years of building a relationship with a potential project partner (J. Rudolph, personal communication, July 2, 2021). Having these strong relations opens other doors to help recruit project partners, primarily through word of mouth. Some organizations after working on a project with a WPI center may think of an idea for a different organization in the same sector and refer the center to them (D. Golding, personal communication, June 22, 2021). Other methods include project center websites, local coordinators, and social media. Some of the centers like the London center have websites that they will refer potential project partners to so they can get a feel for what the project center must operate (D. Golding, personal communication, June 22, 2021). There are a few centers such as Hangzhou, London, and Morocco that have coordinators. The coordinators are good for opening the doors for potential project partners and center directors to build that relationship. They are a consistent voice on the ground, and they will start the conversation with local organizations (R. Moody, personal communication, June 23, 2021). Then there is social media. The Morocco center is the only center that discussed using social media, but it is a platform that has become very popular over the past two decades and I believe there is room to

grow in this area as far as recruiting potential project partners. When center directors are searching for project partners, they are looking for project partners that will provide them with projects that impact the community and engage students. The center directors want these projects to be beneficial for the students and the project partners. So, how would an organization define a beneficial project?

As I stated in the literature review chapter, different organizations (for-profit, universities, government, nonprofits/NGO) have different priorities. The best type of organization to sponsor a project are either non-profits or NGOs. There are so many organizations that fall under this category especially in a city like Lyon. There are so many topics that you can cover with different NGOs or non-profits. One great aspect of nonprofits that was touched upon in the literature review chapter, is their connection with the community. They are also volunteer based, which is one reason why the projects that come from them are genuine. There are issues when it comes to working with these organizations. One of them is that sometimes they are understaffed and do not have the resources to support a project. There are other types of organizations, but these are the ones that WPI typically deals with for IQPs. Big corporations or any for-profit organization do not typically sponsor projects that are very impactful. One reason is because they are normally out for their own gain and a project that they would sponsor would benefit themselves more than the community. Although, this is not always the case. These organizations typically have a great deal of resources and do not need the help from WPI. These organizations are typically more suited for MQPs. Universities are another type of organizations that can sponsor projects. The thing with universities is that a lot of times their projects are professors thinking of an idea and wanting to research them. This goes back to the idea of projects being authentic. Projects are more likely to not be authentic in that situation (R. Vaz, personal communication, June 16, 2021). This does not mean that these two types of organizations cannot provide good projects, or that the projects will not be genuine. There have been many successful projects using both types of organizations. Hangzhou is a great example of using for-profits. They have a theme of entrepreneurship in their center, and they have partnered with many businesses including one they are currently trying to recruit, which is a biomedical company (J. Rudolph, personal communication, July 2, 2021). Government is another type of organization that can sponsor projects. These organizations do have many authentic and interesting ideas. Their projects do impact the community. They are a good source to sponsor projects. One issue with governmental organizations is they can be very bureaucratic, which makes becoming partners difficult.

Findings 2-4 are critical in the makings of high-quality projects. They are all a part of what an engaging and impactful project is. They are also important to a high-quality theme of projects for a center. Who within Lyon can partner with the Lyon project center? These were the findings that came through my research. Now, I must interpret these findings so I can make recommendations for a high-quality theme for the Lyon project center. When I am picking the themes I will recommend, I must think about what is important to the city of Lyon. I will recommend one that aligns with Professor Miller's background, will have engaging project outcomes, and can be supported by the organizations within Lyon.

Chapter 5: Recommendations

I am making recommendations for a few high-quality potential themes for the Lyon project center and some ideas to help recruit new project partners. The ideas for a high-quality theme come from the previous section. A high-quality project center theme uses all the aspects of a successful project center. The project center director will have the most influence on a theme. For instance, the Melbourne center has done many projects in the past on safety analysis and technology. This is because one of the co-directors came from a fire protection engineering background and made a lot of connections with the fire board and emergency services organizations. The other had a mechanical engineering background and found projects in technology for the disabled and rehabilitation (R. Vaz, personal communication, June 16, 2021). The location will also influence the project center's theme. For instance, China is such a big country, and it is a major player in the world's economy that businesses are very important to the Hangzhou community (J. Rudolph, personal communication, July 2, 2021). This is one reason why entrepreneurship is a theme for China. Lastly, the project partners that sponsor a project will also be an influence on the types of projects. The projects that organizations want to take part in will depend on what is important to each individual organization. As I discussed in the previous chapter, Lyon has many organizations located within the city. The idea is to find an organization that would want to partner with WPI for a project, has a similar interest in the theme that the Lyon Project center wants to pursue, and can support a project that will be beneficial to both the students and the organization. The first recommendation I want to make is for a theme in social and human services.

5.1   Themes

5.1.1 *Social & Human Services*

Social & human services is my first recommendation because I believe it has the potential to be successful and can be implemented next year or the year after. Here are the reasons why I think this will be a successful project center theme. The first is the sponsors that this attracts. In my background research into the IQP, I found that this project theme attracts many non-profit or NGO project partners. For the IQP, this is the type of organization that directors and students ideally want to become partners in an IQP given their connection to the community. These projects will also give students the chance to engage with the community of Lyon. Another reason is because of the current director's vision for the project center. In my sponsor meeting with the current director, I found that Professor Miller is interested in doing projects in food renewal. This would make for a good social & human service topic because the current director's interest in doing these projects. So, what are some of the organizations that have an interest in food renewal? One potential project partner is La Commune. This is one of the organizations that Professor Miller has contacted. La commune is a cultural scene in Lyon that helps local chefs express their talent in the culinary arts (La Commune, 2021). In my archival research, I came across another potential sponsor for food renewal. Refugee food is an NGO that helps refugees in many cities express their culinary art skills and helps them find jobs as cooks (Refugee Food Festival, 2021). This could be another potential sponsor. To recruit this organization, I would recommend going to their annual food festival that takes place in Lyon during June. This way the center director can have a face-to-face meeting with them and see what they are all about. Another possible project partner is Veolia. They are an organization located in Lyon that assists Lyon with preserving the drinking water (Veolia, 2021). They could be an organization worth investigating for this theme. These are just some ideas of where to take a social and human

services project center theme. There are many more organizations within Lyon that can support these projects.

5.1.2 *Economic Growth, Sustainability, & Development*

The next theme I am going to recommend is economic growth, sustainability, & development. I am recommending this theme because it is what the project center is already doing. The project center already has project partners to support this type of theme, such as SINGA and Grand Parc Miribel Jonage. This is also a good idea for a high-quality project center theme. This theme will give the project center the ability to work with both government and non-profit organizations, which are two organizations that are resourceful and can support an IQP. These projects have the characteristics to be impactful, help engage the students in the community, and help the students develop the skills that are sought after with the IQP. For instance, the SINGA project currently has the students attempting to make recommendations on creating a space for refugees within Lyon. The recommendation they make will impact the refugee community in Lyon. The project also has the students engaging with the refugee community so they can understand their needs. The outcome of the project will be beneficial for both students and the project partner, which is what is looked for in a high-quality project. There are other organizations that reside in Lyon that can partner with WPI for a project. I came across another organization from ONLYLYON that helps refugees. The Tissue Solidaire is an association dedicated to helping refugees integrate into the community. Their mission is to accelerate the social and professional inclusion of exiles (Weavers, 2021). I bring this association up because they may be another potential sponsor that can create projects under the economic growth, sustainability, & development theme. As I said earlier, this theme is already established at the Lyon center. This means that it just must be kept up and the network of project partners should be expanded.

5.1.3 *Energy & Resources*

The third and final theme that I am going to recommend is in energy & resources. I choose this recommendation as more of a long-term recommendation. I believe this makes for a high-quality project theme in Lyon for a few reasons. The first is that this is ideally a project theme that can attract many different types of project partners. Energy & resources are essential to just about everyone's way of life. Whether it is NGOs helping new refugees get efficient energy use or the government looking to increase the use of solar panels. An innovative city such as Lyon will have many opportunities to work on these projects. Another reason is that they make for high-quality projects. The project would be able to get students into the community they are trying to help makes these recommendations for and build a connection. Since most of our students are in STEM areas of study, it will help them envision their careers in a culturally sensitive manner. I am going to expand upon what I mean by a long-term recommendation. I do not mean that this theme will be the theme for an extended period, but that is a possibility. What I mean by long-term, is that it may take a few years for the project center to be established in Lyon and be able to recruit these types of sponsors. The Lyon project center has already worked on sustainability and that can help relate to social & human services, but the center has yet to work on anything in this field. So, recruiting sponsors maybe more difficult than the other two themes that I recommended. A good place to start for energy & resources maybe Pulsalys. Pulsalys is a tech company located in Lyon. They are a key player in the development in Lyon (Pulsalys, 2021). Now, will they become a partner for the Lyon project center? That would depend on their wants and needs. They may be a company that does not need our help. They do however help other companies and universities within Lyon (Pulsalys, 2021). So, they are

possibly a good starting point to help the Lyon Project center expand their network of project partners.

There are other themes that I can recommend for the Lyon project center. I could recommend a theme in safety analysis, healthcare and technology, or urban and environmental planning. Ideas for project partners could be Ludocare. This company was started in 2017 and they produce robots that support children with chronic diseases (Elodie Loisel, 2021). This company also works with the JAM association in France. The JAM association helps children and their families with cystic fibrosis (Association JAM, 2021). The JAM association works with donations and a volunteer board of directors. They would be good courses to take for the project center, but I believe the three I recommend are the best options. How is the project center going to recruit new sponsors?

5.2   Networking

5.2.1 *Website*

I also recommend that the Lyon project center create their own website. Having a website for the project center would give more of a professional and legitimate feel to the sponsors. The website should be simple. There should not be too many pages and each page should simply get the point to the reader. When building the website, the center should keep in mind the audience that is going to be visiting the website. The website should be directed towards two groups of people. The first should be project partners potential and returning. The site should be able to tell the project partners what the center has done and what the center's vision is. There should be a page that has all the projects already completed in Lyon, and there should be a page that describes the project center's mission. The other audience is for the students who are placed at the Lyon project center. The website should not be trying to attract students to the center. The eprojects site already does that, and it would be too much information. The website should inform the students on what to expect while they are in Lyon. It can be a good source of information for them about the community. Having a website will promote the center and will help attract potential partners to work with WPI.

5.2.2 *Local Coordinator*

Although a local coordinator is a helpful tool, I would not recommend it for the Lyon project center at this point in time. I am not saying that a local coordinator should never work with the project center. Hiring a local coordinator will cost WPI money. So, the local coordinator should only be a resource when needed. One reason I have seen a local coordinator be hired is to help closed the cultural gap between the school and the community. As I stated in the previous chapter, Morocco uses a coordinator because they are a developing country where an email can be overlooked and is not a good introduction. Hangzhou also uses a local coordinator because it is not easy to get the locals in China to trust WPI. So, the local coordinator closes that gap for the center. Even though there is a cultural gap between America and France, the gap is not significant enough for the need of a local coordinator. The other reason I have seen a local coordinator be used is when there is a significant of number of projects that need to be sponsored. London is a good example of this. London is offered three terms a year, which mean there needs to be about 18 projects. As of right now, the Lyon project center only does one term a year. So, the need for a coordinator is not there for the project center. I can see that after the network of sponsors has expanded that Lyon could potentially be offered for two or three terms. If that becomes the case, where the Lyon center is looking for 12 to 18 projects a year and the center is having trouble recruiting project partners. Then, I would recommend hiring a local coordinator. For the moment, a local coordinator is not needed.

Chapter 6: Conclusion

The recommendations that I have made should help the project center identify a high-quality project theme. Even though I made a recommendation for three different themes, the project center does not have to stick strictly to one theme. If the center director chooses to or is limited, there could be a dual theme. One term can have three projects in social & human services and then three projects in economic growth, sustainability, & development. I would like for this paper to be a reference point for new ideas for the project center.

My intention is for Professor Miller to take the work I have done here and have a good direction on where to start with the project center theme. I also intend for Professor Miller to reach out to some of the organizations I have laid out for potential project partner. Lastly, I intend for Professor Miller to put my recommendations for networking into action.

There is also room for expansion on my work. If these themes have run their course in the future, there can be new themes for the project. Like I mentioned in the previous chapter the center can expand into safety analysis or urban and environmental planning. Future IQP students can also read my research and hopefully it will help in their research. Whether it is for a theme for a different IQP center or expanding upon the Lyon project center.

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Appendix A: IRB Approval

WORCESTER POLYTECHNIC INSTITUTE

100 INSTITUTE ROAD, WORCESTER MA 01609 USA

Institutional Review Board

FWA #00015024 - HHS #00007374

Notification of IRB Approval

Date: 07-Jul-2021

PI: Krueger, Robert
Protocol Number: IRB-21-0676
Protocol Title: Theme for the Lyon Project Center

Approved Study Personnel: Rollins, William~Stanlick, Sarah~Miller,
Fabienne~Krueger, Robert~

Effective Date: 07-Jul-2021

Exemption Category: 2
Sponsor*:

The WPI Institutional Review Board (IRB) has reviewed the materials submitted with regard to the above-mentioned protocol.We have determined that this research is exempt from further IRB review under 45 CFR § 46.104 (d). For a detailed description of the categories of exempt research, please refer to the IRB website.

The study is approved indefinitely unless terminated sooner (in writing) by yourself or the WPI IRB. Amendments or changes to the research that might alter this specific approval must be submitted to the WPI IRB for review and may require a full IRB application in order for the research to continue. You are also required to report any adverse events with regard to your study subjects or their data.

Changes to the research which might affect its exempt status must be submitted to the WPI IRB for review and approval before such changes are put into practice. A full IRB application may be required in order for the research to continue.

Please contact the IRB at irb@wpi.edu if you have any questions.
*if blank, the IRB has not reviewed any funding proposal for this protocol

Appendix B: Interview Template Questions

Project Center Questionnaire:
1. Why did you take up this role/or found this IQP center?
2. How would you define your role in the center as the director?
3. This project center seems to have a [insert adjective] theme. Did you anticipate this, or were you expecting to have different types of projects? Or was there a specific issue that you wanted to focus on?
4. What have you found to be important to the city of …?
5. What were your methods for researching what was important to …?
6. What type of sponsors were the most common type that were found (community, Government, Education, Non-profit, or Businesses)?
7. What was the process for finding your sponsors and increasing your network? Were there any initial struggles with getting attention from sponsors / the community?
8. Which method did you find the most useful for recruiting new sponsors?
9. Would you say your website is a good source to find new sponsors? (If the project center has a website)
10. Does your site have a local coordinator? How helpful is the local coordinator with connecting with the community? How did they hire them?

DIGS Faculty Questionnaire:
1. What makes you want to work at a new project center and center director?
2. What do you want the advisors and students to get out of the project center?
3. What do you want the community to get out of the project center?
4. In your opinion what makes a project center successful?
5. Is there a place you would have liked to set up a project center, but did not? Where?
6. What reason would you have wanted to work in this community?
7. In your experience, have you started to work at a project center thinking about taking it in a certain direction and then it turns out the work you wanted to do was not what you were doing?
8. Have you seen other center directors come across this problem?
9. Have you worked at project centers where the projects you expected to complete are the ones you get to work on?
10. Do you have any writing on project-based learning? If so, where can I find them? (Based off Professor Krueger saying that Professor Vaz has written an article on the subject)

Appendix C: Approach to Answering the Research Questions

In order to analyze the data that was collected, I will first go over the main sources of the data that I collected. First, I conducted five interviews. Each person I interviewed came from a different background and IQP center. The questions I asked them came from the template that is shown in appendix B. The interviews were used to answer the first research question as stated in the methodology chapter.

The first interview was with Professor Rich Vaz. Professor Vaz had a long tenure with the global project center. He was center director for the Netherlands, Bangkok, and Ireland. The Netherlands and Bangkok is an IQP center while Ireland mainly focuses on MQPs. Then, Professor Vaz became associate dean of IGSD in 1998. In 2006, he was promoted to dean, which he filled that position for ten years. Given his background with GEO, I asked him a completely different set of questions than the rest of the director. The answer he gave laid the foundation for how I approached the rest of the interviews (R. Vaz, personal communication, June 16, 2021).

The next interview was with Professor Dominic Golding. Professor Golding is the current director of both the Nantucket and London IQP center. Professor Golding has been running both IQP centers since 2010. The London center was a well-established center when Professor Golding took over with Professor Krueger as his co-director. Then, Professor Golding became the sole director when Professor Krueger took over the Worcester, England project center. The Nantucket center had only completed one term before Professor Golding became the center Director (D. Golding, personal communication, June 22, 2021).

The third interview was with Professor Rebecca Moody. Professor Moody is the current director of Morocco. Morocco is both an IQP and a HUA center. Professor Moody directs both centers, but she is a co-director with Professor Mohammed El Hamzaoui. They both took over the IQP center almost two years ago when the founding director Tahar El-Korchi stepped down (R. Moody, personal communication, June 23, 2021).

The fourth interview I had was with Professor Alexander Smith. Professor Smith co-directs the Namibia Project center. His co-director is Professor Joseph Doiron. Professor Smith took over as co-director in 2020 when the previous director stepped down (A. Smith, personal communication, June 24, 2021).

The last interview was with Professor Rudolph. Professor Rudolph is the current director of the Hangzhou project center. She initially started the project center because WPI did not have a center in mainland China. Professor Rudolph felt it was essential to have a presence there if WPI was to have a significant global footprint (J. Rudolph, personal communication, July 2, 2021).

The last main source of information came from the internet. Two organizations that I researched were Aderly and ONLYLYON. These two organizations are big actors within Lyon. They were both great sources to answer the second research question from the methodology chapter. All these sources were used to answer the two research questions stated in the Methodology chapter.

Research Question 1 -How do project center directors define their roles?

To answer the first research question, how do project center directors define their roles, I divided the interview questions into three different sections. The question has many layers to it and different opinions may affect it. It is not a simple answer, which is why there were three groupings of questions. The first group of questions were about the asked the directors about their roles and how they fit in with the project centers. The second group of questions discussed their center's theme and network of sponsors. The final group explored the project center's way

of expanding their network of sponsors. Through this line of questioning, I was able to determine that they are the organizers of the project center. I will present how I determined this by going into more detail of the interviews.

The first group of questions started with me asking each director how they became the director for their center. When I asked this question, I kept in mind the purpose of IQPs, which is to have students aid in the community of the IQP center. I was expecting an answer that either related wanting to help the students, or that they saw a need in their respective communities and wanted to help in that way. The main answer I got was that the previous director stepped down and they were able to take over. The next question asked the interviewee to define their role as a director. I asked this knowing I was going to get different answers depending on the person I was asking. Professor Smith identified his role as director to be an organizer. He discussed how his role is to set up transportation, accommodations, to organize the sponsors, and oversee projects (A. Smith, personal communication, June 24, 2021). While Professor Golding defined his role as an information source. He discussed how he was an organizer with the projects like Professor Smith discussed, but he also discussed how his role includes keeping the advisors and students informed on everything that has to do with the center (D. Golding, personal communication, June 22, 2021). Professor Moody believes her role is developing a structure for which students and faculty are comfortable, can get the proper information needed, and will be successful (R. Moody, personal communication, June 23, 2021). The last question in this group was what the characteristics of a successful project center are. This was another question that I wanted to get different opinions on and to see what each person said. Professor Vaz had a list of what he thought was important to a good successful project center:

1. Viable project center director
2. Safe environment
3. Affordability
4. Needs to be a desirable location.
5. Motivating projects

In our discussion, Professor Vaz stated that the center director was the most important piece, and that the others were what he thought of as dean of IGSD (R. Vaz, personal communication, June 16, 2021). The other center director I interviewed gave an answer that resembled Professor Vaz, but what they were mainly thinking of was the experience of the student. They want their students to have an impactful IQP experience.

The next set of questions were specifically about the project centers themselves. I asked each professor about their center, the theme I found, and if they anticipated the theme. As an example, I asked Professor Smith about Namibia has a project theme of:

1. Economic growth, stability, and development
2. Energy and Resources

He said that given the background of Namibia and being 30 years removed from their independence that they were fair categorizations of the theme. He did not say that he anticipated the themes because he did not start the center and only recently took over. He speculated that the founding director did anticipate the theme given the needs of Namibia (A. Smith, personal communication, June 24, 2021). Professor Moody had a similar answer to Professor Smith. She did go over how because Morocco is an Arabic speaking country that it is difficult to obtain sponsors that can facilitate good projects. So, her IQP center mainly works with many social & human services type projects (R. Moody, personal communication, June 23, 2021). While, Professor Golding had a different take on project themes than from the other professors. For

Nantucket, it was about the community needs. As for London, Professor Golding discussed how he liked to have different projects so the students could explore different interests. He was given a network of sponsors, but sponsors do tend to change over time. Given what London has to offer, he likes to have a diverse set of sponsors rather than one particular theme for the center (D. Golding, personal communication, June 22, 2021). The other question I asked in this group asked about the sponsors they worked with, and if they saw overlap in different organizations with the types of projects. Professor Smith, and Moody both stated that they primarily work with NGOs. Professor Golding works with museums and local authorities with his mix of sponsors. The museums in London are more interested in educational projects. The local authorities can have some projects in education, but they also have projects on energy consumption, climate change, or urban planning (D. Golding, personal communication, June 22, 2021). I mainly asked these questions to see how each center operated under their center directors.

The last group of questions addressed expanding the center's network of sponsors. So, the first question I would ask is how would you describe your process in finding sponsors for projects. There were two reasons why I asked this question. The first was to find the most useful and common method. This method would be word of mouth. Each center director said that they at one time or another used a local coordinator to help start and build relationships with sponsors, or they had preexisting relationships, which helped recruit new sponsors. The other reason why I asked this question was to get a new idea that I would not have thought of for recruiting a new sponsor. One idea that came from the interviews was to use social media to help find new sponsors (R. Moody, personal communication, June 23, 2021). Then, I would end the meeting by asking two questions. I would ask the directors about their website and local coordinator. I asked about these two things because Professor Miller and I discussed them in our sponsor meetings, and I wanted to see how viable they were for recruiting new sponsors. One idea that came about is to use the website as a source of info for the students to learn more about their center, and for the sponsors or potential sponsors to explore and get a good feel for the project center (D. Golding, personal communication, June 22, 2021). Another train of thought that was produced, was that the website helps legitimize the project center for the sponsors. It also allows them to communicate what the center is about to the sponsors (R. Moody, personal communication, June 23, 2021). When asked about the local coordinator each site had at some point used one. The Namibia site used one in the past in the local university, but they no longer use that source (A. Smith, personal communication, June 24, 2021). Morocco does currently use one. Their coordinator is very helpful with finding new potential sponsors. Since Morocco is still a developing country, email is not a widely used way for initial contact. They primarily like to use one on one contact. So, the local coordinator helps with recruiting new sponsors by getting the door (R. Moody, personal communication, June 23, 2021). London also uses a local coordinator. The reason why London uses one is because it is a project center that is in high demand by students. The center conducts projects there three times a year. This means that Professor Golding is responsible for finding 18 projects for the year. Given the number of projects that he needs to come up with, the local coordinator helps bring in more sponsors (D. Golding, personal communication, June 22, 2021). Both questions show that the website and coordinators are viable resources. They also give some insight into what the center director's role is when it comes to their students and sponsors.

After conducting all these interviews, I was able to see how important the role of the project center director is. Yes, the project center director is an organizer as me and Professor Smith stated earlier. The center director does coordinate the projects, housing accommodations for

students and faculty, and organize their network of sponsors. There is much more to it. They are information sources for their students, faculty members, and sponsors. They also recruit new sponsors to come up with new and engaging project ideas.

Research Question 2 -What is important to the community of Lyon?

The next research question I tackled was what is important to the community of Lyon. To do this, I research many different organizations within Lyon. I found that Lyon is a city that wants to make itself an appealing city for people who want to live or visit the city of Lyon. Two major organizations that helped were ONLYLYON and Aderly, which were both discussed in the literature review chapter. Both organizations have their own agenda for how they want to improve Lyon. Many of the things they find important are similar to one another, but they are also looking for different things too. There are also many organizations connected to both Aderly and ONLYLYON, which helped me determine other things that were important. How does a city make itself appealing to people?

One way is to attract more businesses to the city. This is where Aderly and ONLYLYON interests overlap. They both want to improve upon the business world of Lyon. As it was stated earlier Aderly is the economic development agency for Lyon and was founded by the city of Lyon. Their mission is to promote the city of Lyon and to identify and establish new investments, and creators of jobs (Aderly, 2021). So, Aderly's main focus is on business growth and development. ONLYLYON does focus on business, but they try to promote businesses already established (ONLYLYON, 2021). These two organizations represent Lyon's business interests very well.

Lyon has many other interests as well. The city has an interest in their college students. The city invests in the future of their college citizens. The city also has an interest in attracting tourists. They do this by keeping their city clean, preserving the landscape, and creating attractions that would make people want to come visits the city. ONLYLYON also does well in promoting these aspects through their website and their interests (ONLYLYON, 2021).

So, I went over what I found was important to Lyon. Their business and investments, their college students, and attracting people from around the world to come to their city. Now, even though that is what I have found does not mean that there is more to what Lyon finds important. I mainly looked at two big organizations within Lyon that have ties to other organizations within the city. I also went over what a project center director's role is. Now, I need to analyze the data that I have gathered and find a way to translate it into recommendations for a good theme for Lyon.

Appendix D: Table of Project Center Themes

TABLE 1. PROJECT CENTER THEMES

Column1 Project Centers / Themes	Column3 Health Care and Tech	Column4 Law and Techno	Column5 Safety/Analysis	Column6 Technology and Environ	Column7 Education in a Technologica	Column8 Science and Techno	Column9 Urban and Environmental Pla	Column10 Social and Human Ser	Column11 Energy and Resou	Column12 Economic Growt	Column13 Social Studies of Science	Column14 Humanistic Stud	Column15 Historic and Artistic	Column16 Total IUQP or project centers
Asuncion, Paraguay	0	0	0	7	1	0	4	6	2	4	0	0	0	26
Bangkok, Thailand	3	0	1	20	4	0	8	9	7	8	2	2	0	64
Bar Harbor, Maine	0	0	21	0	0	1	0	2	2	2	1	0	4	29
Beijing, China	1	0	0	0	1	2	0	0	0	0	0	1	0	5
Boston, Massachusetts	2	1	9	9	2	0	14	1	1	0	0	0	0	43
Bucharest, Romania	0	2	0	0	1	0	1	1	0	0	0	0	0	5
Cape Town, South Africa	1	0	0	0	0	0	28	5	14	2	0	0	0	50
Copenhagen, Denmark	2	0	0	9	8	2	15	6	9	7	5	1	1	65
Cuenca, Ecuador	0	0	0	1	1	0	0	0	0	0	0	1	0	12
Eilat, Israel	0	0	0	3	0	0	2	0	0	1	1	0	0	6
Glacier National Park, Mont	0	0	4	0	0	1	0	0	0	1	8	0	1	5
Germany	2	0	2	0	0	0	1	0	1	0	0	0	0	5
Hangzhou, China	1	1	2	3	3	0	7	7	1	4	0	1	1	24
Hilo, Hawaii	0	0	1	2	0	0	0	0	0	0	0	0	0	4
Hong Kong, China	1	1	0	7	10	2	21	4	5	3	0	2	2	57
Kyoto, Japan	1	0	0	0	0	0	0	1	0	0	0	1	2	5
Kyoto, Ghana	0	0	0	2	0	2	2	0	0	0	0	0	0	7
London, England	2	3	2	8	44	0	40	15	17	8	3	1	2	145
Lyon, France	0	0	1	1	1	0	1	4	0	0	0	0	0	7
Mandi, India	5	1	0	6	2	0	3	1	5	3	1	0	1	27
Melbourne, Australia	2	13	16	29	5	5	12	25	14	4	4	1	6	129
Monteverde, Costa Rica	0	1	0	0	0	0	0	0	0	0	0	0	0	3
Moscow, Russia	0	0	0	2	1	2	4	5	2	1	1	1	0	18
Nantucket, Massachusetts	1	0	4	1	4	0	12	5	4	3	3	1	2	43
Panama City, Panama	2	0	1	2	2	0	2	2	2	2	0	0	0	16
Rabat, Morocco	1	1	2	3	2	2	7	7	4	0	2	2	2	23
Reykjavik, Iceland	0	0	0	2	0	0	3	2	0	0	0	0	0	6
San Jose, Costa Rica	0	0	3	22	3	2	10	3	9	10	1	1	0	62
San Juan, Puerto Rico	1	3	11	11	1	2	23	11	11	2	2	0	2	59
Santa Fe, New Mexico	0	2	7	0	0	9	9	0	4	2	0	1	0	31
Sharjah, United Arab Emir.	0	0	0	0	1	2	0	1	1	0	0	0	0	2
Thessaloniki, Greece	1	0	2	4	1	0	8	1	1	0	0	0	0	14
Tirana, Albania	0	0	4	4	1	1	4	1	1	2	1	2	2	18
Venice, Italy	0	3	10	7	2	16	5	6	4	7	4	14	1	59
Washington, DC	1	3	16	10	5	11	16	6	6	11	4	0	0	74
Wellington, New Zealand	2	1	3	8	5	0	4	5	3	2	2	1	2	38
Windhoek, Namibia	4	0	2	4	7	0	4	3	12	15	2	1	1	53
Worcester, England	0	0	0	4	2	0	2	0	6	6	0	0	0	16
Worcester, Massachusetts	1	0	1	95	9	7	14	29	11	4	4	6	8	109
Yerevan, Armenia	4	0	0	3	2	2	1	2	0	0	0	0	0	14
Zurich, Switzerland	2	1	4	3	4	2	1	2	7	6	5	1	1	32
Total Themed IUQPs	37	16	59	227	161	47	280	172	167	100	54	25	56	1411