Exploring Mixed Team Models in Japan

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Kyoto, Japan Project Center

Report Submitted to:

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Table of Contents

List of Figures

List of Tables

Authorship List

Abstract	Authors: Samantha Lopez and Bradley Sprunger Editors: Samantha Lopez and Bradley Sprunger
Executive Summary	Authors: Samantha Lopez and Bradley Sprunger Editors: Samantha Lopez, Carter Bullock, Matthew Fredo, Bradley Sprunger
Chapter 1: Introducing a Mixed Team Model to WPI	Authors: Carter Bullock and Bradley Sprunger Editors: Matthew Fredo and Samantha Lopez
Chapter 2: Literature Review to Understand Mixed Team Models	Author: Carter Bullock Editors: Samantha Lopez, Matthew Fredo, Bradley Sprunger
Chapter 2.1: International Exchange for Domestic Japanese Students	Author: Matthew Fredo Editors: Samantha Lopez, Carter Bullock, Bradley Sprunger
Chapter 2.2: Voluntourism	Author: Samantha Lopez Editors: Carter Bullock, Matthew Fredo, Bradley Sprunger
Chapter 2.3: Diverse Teams in the Past	Author: Bradley Sprunger Editors: Samantha Lopez, Carter Bullock, Matthew Fredo
Chapter 3: Methods for Research on Implementing a Mixed Team Model	Authors: Samantha Lopez, Carter Bullock, Matthew Fredo, Bradley Sprunger Editors: Samantha Lopez, Carter Bullock, Matthew Fredo, Bradley Sprunger
Chapter 3.1: Objective 1	Author: Carter Bullock Editor: Matthew Fredo
Chapter 3.2: Objective 2	Author: Samantha Lopez Editor: Bradley Sprunger
Chapter 3.3: Objective 3	Author: Bradley Sprunger Editor: Samantha Lopez
Chapter 3.4: Objective 4	Author: Matthew Fredo Editor: Carter Bullock
Chapter 4: WPI Director, Advisor, and Student Interview Findings	Author: Samantha Lopez Editors: Carter Bullock, Matthew Fredo, Bradley Sprunger

Chapter 4.1: Project Sites with Mixed IQP Teams	Author: Samantha Lopez Editors: Carter Bullock, Matthew Fredo, Bradley Sprunger
Chapter 4.2: Barriers Faced by WPI Students, Advisors, and Directors While on IQP	Author: Samantha Lopez Editors: Carter Bullock, Matthew Fredo, Bradley Sprunger
Chapter 4.3: Directing and Advising Mixed Teams	Author: Samantha Lopez Editors: Carter Bullock, Matthew Fredo, Bradley Sprunger
Chapter 4.4: Team Practices that Allow Students to Experience Global Learning more Effectively	Author: Samantha Lopez Editors: Carter Bullock, Matthew Fredo, Bradley Sprunger
Chapter 4.5: Comparing Course Calendars Based on Director Interview Feedback	Author: Carter Bullock Editors: Samantha Lopez, Matthew Fredo, Bradley Sprunger
Chapter 5: Recommendations for Future Mixed Team Models	Author: Samantha Lopez Editors: Carter Bullock, Matthew Fredo, Bradley Sprunger
Chapter 5.1: Developing a Mixed Team Model for Implementation at any IQP Project Center	Author: Matthew Fredo Editors: Samantha Lopez, Carter Bullock, Bradley Sprunger
Chapter 5.2: Proposed Model for the Kyoto, Japan IQP Project Center	Author: Bradley Sprunger Editors: Samantha Lopez, Carter Bullock, Matthew Fredo
Chapter 6: Conclusion	Author: Matthew Fredo and Carter Bullock Editor: Samantha Lopez

Abstract

This report gives our recommendations for implementing a "mixed team model" in Kyoto, Japan IQP center, and other IQP project centers. A mixed team comprises members from various backgrounds and experiences, in this case, students from Japan and WPI working together. We created a suggested model that we believe is the best fit given all the factors taken into account after collecting information from interviews with project directors, advisors, and students from previous IQP centers who used a mixed team model. Through our research, we were able to demonstrate the benefits of diversity in project work and how best to implement it to better the global learning experiences of both WPI and partnered students while providing a guideline to any other IQPs looking to use a mixed team model.

Executive Summary

Introducing a Mixed Team Model to WPI

Worcester Polytechnic Institute's (WPI) Interactive Qualifying Project (IQP) enables students to conduct social science research domestically and internationally with various people and organizations. Each year select IQP project centers partner with either volunteers or universities abroad over the seven-week term. These foreign partners collaborate with WPI students on the IQP project together, thus forming a "Mixed Team." Due to this international partnership, WPI students are able to work in a diverse mixed team to improve their study abroad experience through means of cultural enrichment and the opportunity to work side by side with international students towards one common goal.

A mixed team model for the Kyoto, Japan Project Center could allow WPI and Japanese students to flourish due to the increase of diversity and support provided by Japanese-speaking team members. Jennifer deWinter, the Director of the Japan Project Center, would like to explore whether this model would work in Kyoto. Given the previous problems experienced by our sponsor, such as the lingua-cultural barrier that effectively inhibits the communication of those studying in a foreign country, she tasked our team to find a suggested model that could work for this project center while providing areas of cautionary notes for future IQP centers development.

Objectives

The goal of this project was to enrich project work for WPI students by bridging the lingua-cultural gap experienced by WPI students while they work abroad in their Japan sponsored projects. Our objectives for completing this goal were the following:

1. Identify successful team practices in previous mixed team models at other WPI project centers
2. Assess the compatibility of WPI and local Japanese university students for a possible mixed team opportunity
3. Create a guideline for directors and advisors on how to create and manage a mixed team model at a WPI IQP project center.
4. Develop and propose a model that effectively increases the engagement between WPI students and the local Japanese population.

Methodology

The first objective was approached by interviewing the WPI students, advisors, and directors of past IQP projects that had experience with mixed team models. We interviewed ten directors, three advisors, and three students and grouped five different project sites based on the main ideas of the responses to form eight central themes:

IQP Interview Themes	
Mixed Team Model Utilized	**Advisors:** What to know
Language Barriers Faced	**Directors:** What to know
Cultural Barriers Faced	**Students:** What to know
Workload: Students, Advisors, Directors	**Academic Calendar Scheduling**

Our team next looked at how a mixed team model could potentially fit with a select Japanese university by exploring their course calendars and finding overlapping dates generally occurring in WPI's A and B terms. Once our team found this potential overlap, we spoke with a Japanese university faculty director, Andrea Yuri Flores Urushima, about the programs at their university, which had English-speaking students. Finally, we looked into the course requirements for each program and found ideal places to overlay WPI's IQP with one of their long-term project-based courses.

From the three universities we researched, we found Seika University to be an ideal fit. To assess the educational opportunity of this potential partnership for Seika University students, we looked at the interview data from the ten project directors. They guided our efforts towards creating a general guideline for all potential mixed teams IQP centers.

By looking at the interview data and analyzing how mixed teams have been formed in the past, we identified which aspects we feel would properly guide us towards a successful mixed team model for Kyoto.

WPI Director, Advisor, and Students Interview Findings

General:

Currently, five project center sites at WPI utilize a mixed team model that range from institutional-based models to informal and volunteer-based partners. In an institutional-based mixed team model, teams of WPI students partner with local university students at the project site to form a team where both students receive course credit. The project, in this case, is embedded into all student's courses, ensuring attendance and effort. An informal mixed team model is usually "volunteer-based." These people do not form teams but rather help during their free time for a specific form of compensation.

Directors:

As a director, it is not easy to get started and get the project off the ground. Generally speaking, a lot of logistical work goes into not only scheduling but also establishing committed partners and implementing a project best suited for collaboration with both WPI and the partnered university. A director needs to find a "faculty champion," or someone on the partnered university's side who is as committed to the project as the director is. Assuming both scheduling and commitment level is adequate, the director needs to work with the university to develop a project best suited for both WPI, and the partnered students such that work can be equally beneficial and distributed.

Advisors:

As an advisor, there will most likely be an increase in workload as they would be bearing the responsibility of additional students. The advisor would need to accommodate larger teams, balance a much greater diversity of ideas, and increase the communication between the partnered faculty. As our research shows how cohesion is essential to a team's performance, the advisor would need to ensure every student is on the same page and that the workload expectation for both sides of students is clearly defined. For this additional workload, our team suggests that a project center looking to institute a mixed team should be more greatly compensated for this workload.

Students:

As a student, there will also be more work in communication and adapting to a new environment with students of such differing backgrounds. Our team believes this work will greatly benefit all students involved and provide the global educational experience that the IQP program strives to produce. In addition, WPI students should be expecting a greater workload. We found that the local students contributed more to the implementation and environmental engagement aspects on previous mixed team IQP projects. In some previous cases of mixed team models at WPI project centers, the local students are required to continue with the project after the WPI students leave, in effort to implement their findings at their university or in the area. The local students also help to mitigate issues brought forth by the lingua-cultural barrier because they can help the WPI students to immerse themselves more in the foreign environment that they find themselves in. Students often spend time with their local counterparts outside of project work that can help to increase team chemistry as well as motivate all students to complete their work to the best of their ability.

Team Practices that Allow Students to Experience Global Learning More Effectively

Many aspects make a homogenous team efficient. These aspects include group collaboration before IQP, spending free time with the teams' counterparts, and communicating expectations; however, they can still apply when working in diverse teams. Most of the WPI project center directors agreed that it was highly beneficial to their students who worked in a mixed team to spend some of their free time getting to know some of the foreign students they were working with. This allows them to meet their team and communicate during prep-work, before the students travel abroad. By increasing the amount of time spent with the foreign students, the WPI students could experience more of the culture and lives of the people living around them while living in another country. WPI students also reported that going out with the local students increased the productivity of the group due to the fact that communication felt easier.

Another key to having a good team dynamic is setting rules and defining everyone's roles (G. Somasse, personal communication, November 4, 2021). Different cultures look at teamwork differently; for example, Ingrid Shockey, the director of the Mandi, India project center, told us that in Asian cultures, they define teams as doing all the work together at the same time instead of delegating different sections and coming back to put the sections together. Since students work in a diverse team, they should sit down and determine what they expect from this team to go into the project with the same viewpoint. This would establish what each member is expected to complete beforehand to decrease the chances of further confusion or frustration.

Another aspect of teamwork is the willingness of students to participate and help throughout the project. Most WPI project center directors claim that students who receive some credit for their work are more willing to put more effort towards the project than those who do not receive credit. However, even with participating and willing students, local students lead interviews, and at times, leave out important information when translating the interview to their WPI counterparts. This can cause confusion and tension because WPI students are usually given the role of writing the final report, and not having all the information can make this process harder.

Recommendations for Developing a Mixed Team Model at any IQP Project Center

For advisors and directors trying to start a mixed team model, we discuss how to develop a mixed team model most efficiently. From interviews, we suggest the following to enhance teamwork.

❖ Meet before starting the project abroad (during ID2050)
❖ Communicate about expectations and team dynamics before starting the project
 ➢ Consider making a team contract, so expectations are well defined
 ➢ Spend some free time with team counterparts while abroad
❖ Identify faculty champions, define relationships

Many types of mixed team models can function in unique fashions, and there is no standard for running one. Many factors have to be considered before a specific mixed team model can be proposed. In a mixed team, students would spend a considerable amount of time together over the course of several weeks to complete a project given to them at the beginning of the semester. By working with other students from different parts of the world, they would all be able to increase their diversity of thought and expand their knowledge of how to tackle problems they are faced with. Each school that provides students to work in these mixed team models would also have an advisor in charge of overseeing the project work and ensuring their students perform as needed. Different models can allow multiple advisors per group or even one advisor from one school that leads various groups. However, the role of the advisor is to keep the group on task. Students report to their advisors at least once a week to ensure that the project is continuing to head in the right direction or adjust it if needed. The advisor is the individual to whom students should feel comfortable coming to and expressing a problem with their own or international team members. Students we interviewed have reported that sometimes one group of students may think that the other group is not pulling their weight. The solution to this problem was to discuss with their advisor, who could get the foreign advisor to push their student to participate more effectively. The advisor should be the one they go to in order to alleviate any issues that may be inhibiting the efficiency of the project.

Comparing Course Calendars Based on Director Interview Feedback

When creating an academic schedule with IQP and a partnering institution, one needs to consider the uniqueness of WPI's bi-mester calendar. Most universities operate on a semester system, so finding sufficient overlap will be challenging. When looking to integrate two calendars, we recommend following these steps:

❖ Look at both calendars (WPI and local university)
 ➢ Consider ID2050 and IQP (14 weeks of potential overlap)
❖ Record important dates like breaks and long periods of overlap
 ➢ Make sure there is a significant amount of overlap for the students to have enough time to complete their project

While our sponsor is certainly interested in collaborating with several universities in Kyoto, Seika University has expressed the most interest in collaborating with WPI. On top of that, their calendar combines with WPI's for the longest period of time, as they just switched to a four term system similar to WPI's. See "Project Calendar Outline" for more information on the scheduling logistics.

Proposed Model for the Kyoto, Japan IQP Project Center

Although no model proposed realistically should solve every concern addressed in this project, we have derived one potential solution which should alleviate most hardships this international collaboration poses.

WPI students would spend the extent of A term (in the case of an A-B IQP) in the preparation course to understand the project background. Nearing the end of this term, students at Seika University who speak proficient English in the Global Culture Study Program would be selected. These Seika students would be in their 3rd year of college and looking to fulfill their global project requirement with WPI's IQP. The Seika students are then assigned one of the IQP projects and start and continue their preparation while WPI students go on break. By the time WPI students get to Japan, they will have a full month of collaboration between both WPI and Seika students. Because of the preparation phase, both groups will be well informed on the project and ready to start their well-outlined plan of action. Working hand in hand with Seika University, WPI students would be able to further interact with and absorb this new culture without the difficulties posed by being an American student alone in Japan. The Seika University students would have a more well-rounded global learning experience by working on a project alongside WPI students. This proposed model allows students on both sides to have sufficient time to complete a comprehensive project through cooperation and efforts on both ends.
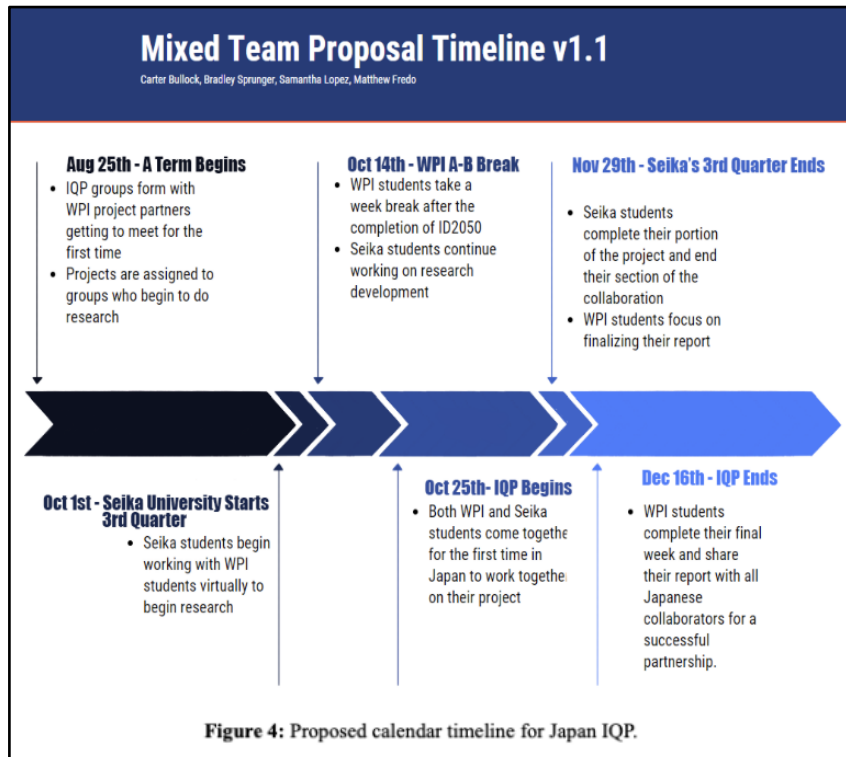
Figure 4: Proposed calendar timeline for Japan IQP.

Conclusion

Through our study, we have found multiple types of mixed team models, each with their pros and cons. However, in the end, each of these models was developed with one goal in mind; to provide a more diverse global learning experience for WPI students and their collaborators. In order to provide the teammates with a more diverse well-rounded, culturally enriching education.

No matter what model a director chooses to develop, it would require more logistical work from directors, advisors, and students. However, all this logistical work pays off in a life-changing experience for students to work with people from different countries. This experience provides a cultural exchange not found anywhere else in the WPI curriculum and gives an opportunity for a new perspective to project-based learning. We hope that all directors and advisors consider this type of experience is well worth the effort required to organize and implement it.

1. Introducing a Mixed Team Model to WPI

Worcester Polytechnic Institute's Interactive Qualifying Project (IQP) enables students to work domestically and internationally with various people and organizations. Worcester Polytechnic Institute developed the Global Projects Program (GPP), in which students are "immersing themselves in the experience, many expand their worldviews, awareness of global issues, and understanding of other cultures." (*Global projects Program*, 2021, pg. 1). Students are selected to form a team from different majors and placed with sponsors from the Project Center to execute a social science project.

The WPI plan incorporates a project-based Interactive Qualifying Project (IQP), done during the third year, allowing students to experience societal issues first-hand. The IQP "challenges students to address a problem that lies at the intersection of science or technology with society" (WPI The Interactive Qualifying Project, 2020, pg. 18). In addition, WPI students can "immerse themselves in new cultures and tackle unstructured, real-world problems in ways that are meaningful to local sponsors in real communities" (*Global projects Program,* 2021, pg. 1). IQP students and project advisors also work with local organizations that project center directors negotiate with to tackle real-life problems and challenges where science and technology meet social issues and human needs.

A small group of WPI project centers created the structure of partnering with a local university and collaborating with local students, thus creating a mixed team model. WPI students in some of those project centers faced lingua-cultural barriers. However, they were able to work in a diverse mixed team while attempting to bridge the barrier and enhance their experience.

The Project Centers of Thailand, India, China, and Russia developed different mixed team models that allow students to work with residents to foster collaboration between local stakeholders and the group members. These project teams enable students to be immersed in a new work environment and culture while balancing their experience in an unfamiliar workplace.

A mixed team model for the Kyoto Project Center could allow WPI and Japanese students to flourish due to the increase of diversity and support provided by Japanese-speaking team members. Though some mixed team models have worked in the past, this does not necessarily mean they will work for WPI IQP teams in Japan, specifically.

Jennifer deWinter, the Director of the Japan Project Center, would like to explore whether this model will work in Kyoto. Given the previous problems experienced by our sponsor, such as the lingua-cultural barrier that effectively inhibits the communication of those studying in a foreign country, she tasked our team to find the best-mixed team model that could bridge this gap. She has asked our team to research previous mixed team models and explore a partnership with Seika University. Next, she asked our team to deliver an overview of which mixed team model would provide the best benefits for both universities. With that, our group developed a mixed team model plan to allow the students to experience a more global way of learning and broaden their horizons in terms of learning style. This was done by analyzing the past IQP teams and project centers that have worked with a mixed team model to find a successful model. Next, we analyzed both the academic requirements of Japanese students and if it is possible to fit this model in with their curriculum. In the end, we proposed the best-mixed team model for both universities.

Our team wanted to make sure we understood the full scope of our project, so before we began, we reviewed a substantial amount of literature related to the project and its background. The background information we gathered will be shown in this report, followed by the core objectives of the project and a study of the methods we used to achieve those objectives. Finally,

we present the data we gathered and give our recommendations to site directors interested in developing a mixed team model in the future. To conclude, we will deliver the proposed model specific to the Kyoto project center.

2. Literature Review to Understand Mixed Team Models

A 2019 survey showed that less than 30% of Japanese residents speak English, with only 2-8% speaking English fluently in Japan (Margolis, 2020). On the other hand, the U.S Census Bureau released a statistic that only 0.0008% of Americans can speak Japanese and English (Butler, 2015). Needless to say, when Americans visit Japan, there exists a noticeable language barrier between residents and English speakers. Language barriers are "visible obstacles to communication and occur when individuals who do not speak and understand each other's languages have difficulties working together" (Skinner, 2012, pg. 358). While one might propose that visitors learn the local language to overcome this, it is not that simple. The School of Language Studies ranks Japanese as a category five language, classifying it as one of the most complex languages for native English speakers to learn, see Figure 1. It would take about an 88-week prep course (2,200 hours) for students to be fluent in Japanese before arriving (Rion, 2020).

Category V: 88 weeks (2200 hours)	
Languages which are exceptionally difficult for native English speakers	
Arabic Cantonese (Chinese) Mandarin (Chinese)	*Japanese Korean

Figure 1: List of category 5 languages for native English speakers

Any team collaboration requires communication. If the group members cannot understand each other, there is no viable way to communicate. It has been proven that a language barrier can drastically inhibit a team's cohesion and group trust. "Effective communication within a team will build a common purpose among team members that will allow them to reach their goals" (*Team leadership,* 2020, pg. 1). Multilingual teams working with a common shared language involve risk in establishing trust. Individuals in the same language community implicitly share social meanings and interpretations (Skinner, 2012). However, researchers at Clemson stated that "the lack of language fluency, under particular, well-identified conditions, does not inevitably create a barrier but may enhance visitors' enjoyment and contribute to cross-cultural interactions" (Mancini-Cross, 2009, pg. 1). We are looking to accomplish this by including a mixed team model at the WPI project center in Kyoto, Japan. By mixing groups of Japanese and English-speaking students on the same project, we can enrich the experience of all members involved because of the increase in cross-cultural interactions. The more interactions that WPI students have with Japanese students open up more opportunities to dive deeper into the local area's culture.

Japan is well known for its deep cultural roots and traditions. Because Japan is an island country, it has severely moderated the influx of outside cultures (Tennant, 2021). This is the opposite of the cultural mixing pot in America. As listed by the Cultural Atlas, some cultural core concepts for Japan include regional character (Kenminsei), Formality, Politeness, and Pacifism (Scroope, 2021). These values each have their unique definition in Japanese culture that

most foreigners do not understand. Studies have shown that mixing different cultural backgrounds on a team often leads to more innovation and big-picture ideas. "The range of experience, expertise, and working methods that a diverse workplace offers can boost problem-solving capacity and lead to greater productivity" (Reynolds, 2021, pg. 1). However, cultural differences can lead to exclusion and alienation if not appropriately handled. In one study, the cultural majority of the team was shown to influence the decisions of cultural minority group members (Miminoshvili, 2021). The cultural minority would often conceal their ideas and knowledge while conforming to the decision and goals of the cultural majority. This set a limit on the minority's behaviors, and the full potential of the project group was never achieved (Miminoshvili, 2021).

Culture is just one factor that can cause stress on international students; being surrounded by an unknown language every day is equally as exhausting. The International Journal of Environmental Research and Public Health did a report on non-native International students studying in Bangladesh. An analysis showed that international students who had difficulties understanding the local language were 2.28 times more likely to experience depression than others. The toll of translating everything or not understanding what is going on around you can chip away at a student's mental health, especially when presented with a heavy course load (Kabir, 2021).

Addressing these mental health concerns in a study abroad program by immersing WPI students in the language and culture of Japan allows students to both enjoy and engage with their environment. In addition, the effects of foreign cultural and linguistic burnout can be easily mitigated, given that students are provided with support.

2.1 International Exchange for Domestic Japanese Students

The cultural barriers in Japan continue to increase due to a new generation of students who are less willing to go abroad. The trend of Japanese students studying abroad has declined in recent years (Bradford, 2015). From 2004-2011 the number of Japanese students studying in the United States dropped 53% (Bradford, 2015). This statistic emphasizes the decrease in interest in studying abroad. Even while America saw over a 50% drop in interest, it remained the most popular destination for international Japanese students. Lassegard conducted a study that defined four categories that contributed to the decline of Japanese study abroad:

1. Issues regarding population and economics
2. Different characteristics of Japanese corporations
3. Factors related to institutions and government
4. Factors regarding individual students

Japanese students' lack of interest in foreign collaboration is a motivational concern (Tanaka, 2007). Therefore, we considered this lack of interest when implementing a mixed team model, as it could benefit both parties involved.
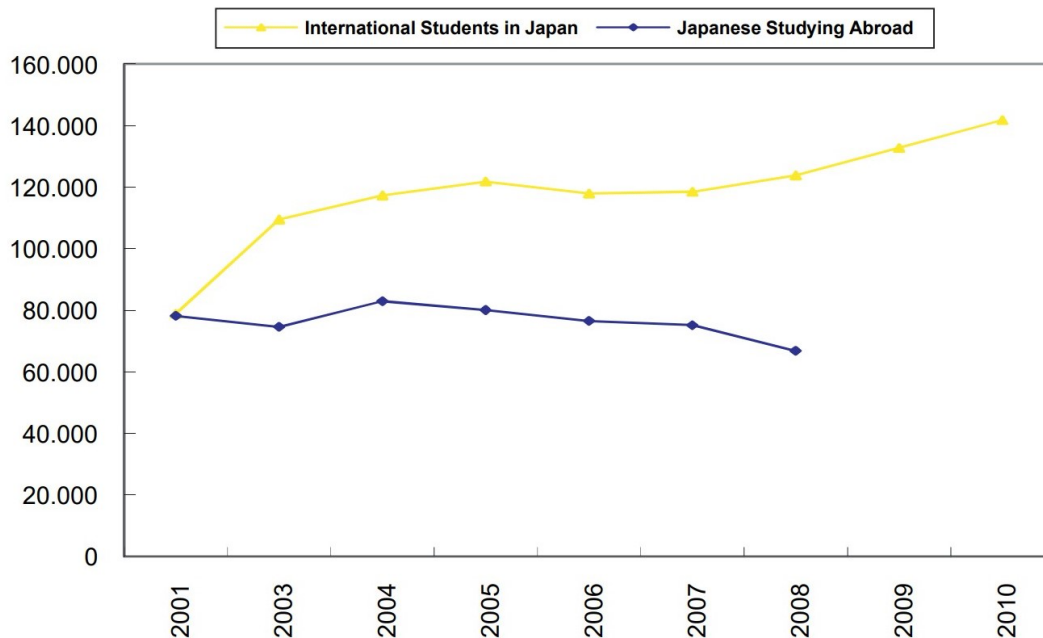
Figure 2: *The downward trend of Japanese students studying abroad from Lassegard in 2013*

Students who study abroad get the opportunity to open themselves up to many different cultures and interact with foreign people; however, the individual experience for each student can vary based on motivation to take those opportunities. Tanaka conducted a study in 2007 with Japanese students studying abroad that showed that the students did not always encounter as many opportunities to speak English outside of the classroom (Tanaka, 2007). For example, Japanese high school students studying in Australia were recorded to be "withdrawing to their own bedrooms quickly and refusing to participate in family activities resulting in Australian hosts assessing the students negatively" (Tanaka, 2007, pg. 36). Because these students did not feel comfortable speaking in a foreign language, they would constantly avoid interactions in that language. The same study by Tanaka done in New Zealand demonstrates how exchange students learning English as a second language had little association with native English speakers outside of the classroom and often went out with their Japanese schoolmates (Tanaka, 2007).

From Maftoon's study, they claim that "Japanese EFL (English as a Foreign Language) learners' would rather direct their interactions towards 'self-expression' and 'personal growth' rather than authentic communication" (Maftoon, 2013, pg. 74). This means that students would rather not interact with other English speakers, which impedes their cultural experience while abroad. However, this problem is not only faced by Japanese students. For example, students from American University primarily used English when abroad in France due to their lack of knowledge of the French language before travel (Tanaka, 2007). This led American students to mingle more with English speakers in France as well as their English-speaking peers, which did not allow them to gain a lot of the cultural experience that they otherwise would have gotten (Tanaka, 2007). This issue can be found in both English and Japanese students participating in study abroad programs due to the students' Willingness to Communicate (WTC) in the new language. English speaking students with a higher WTC were found to create a more extensive social network while abroad, which indicates a direct correlation between the two (Tanaka, 2007).

In addition to low motivation to speak English, foreign language anxiety has been found in non-native English speakers. Foreign language anxiety dampens the motivation for non-native speakers to use English by inhibiting them from "initiating conversation, raising new topics and challenging their teachers" (Maftoon, 2013). This anxiety caused by learning a language such as English for non-native speakers prevents learners from effective participation in academic interactions. Authentic communication in a foreign language can lead to miscommunication or lack of collaboration in a group setting.

With the implementation of a mixed team model, we hope to allow these students, who choose to stay within the country they grew up in, a more global learning style.

2.2 Voluntourism

A decline in the willingness to assimilate to a new culture is shown to cause distance, introversion, and less acceptance of the culture a student is placed in while abroad. Therefore, IQP groups must remain culturally cognizant and sensitive when completing these IQP projects and carrying out this academically driven service-learning work abroad. The WPI IQP program is set up with precautions to avoid the voluntourism mindset. Volunteers go abroad to help but often show instances of disregarding the culture or pushing an outside agenda. There is generally a mindset that community members must change their cultural ways of living to become more developed (Devereux, 2008). In a way, those volunteering are pushing their culture onto those they are helping.

Voluntourism reinforces the notion that citizens of developing countries need help and that service can be provided in short-term doses by inexperienced volunteers (Guttentag, 2009). The idea of voluntourism reinforces harmful colonial stereotypes while elevating the moral status of those who "help" the people (Guttentag, 2009). It produces negative impacts on the individuals who go as well as the community and its members.

Voluntourism and cultural imperialism can be avoided by better practices and ethical guidelines that need to be implemented by the volunteers and the community where service is being done (Munro, 2018). Working with the community as closely as possible could curb such ideas and ensure their needs are met.

2.3 Diverse Teams in the Past

Diverse teams allow people of different cultures to work alongside each other. Generally speaking, diverse teams could be as effective as a homogenous team given sufficient time. A diverse team, having such a broad array of experience, would have alternative solutions and methods of solving a problem. Thus, more discussions and a juxtaposition of ideas must be present (Ramthun, 2012). A case study by the Journal of Leadership and Organizational Studies states that groups that are diverse in their ideas and approaches offer greater potential in performance when compared to groups that all push for the same idea due to lack of diversity. Rather than pursuing a single train of thought, shared collaborative leadership offers higher performance levels on a team (Ramthun, 2012). In other words, allowing every member of a diverse group to have input into the group's course of action rather than proposing a single idea and making the team pursue it yields higher effectiveness. Utilizing alternative team models can yield significant efficiency for a group rather than sticking to some uniform recipe.
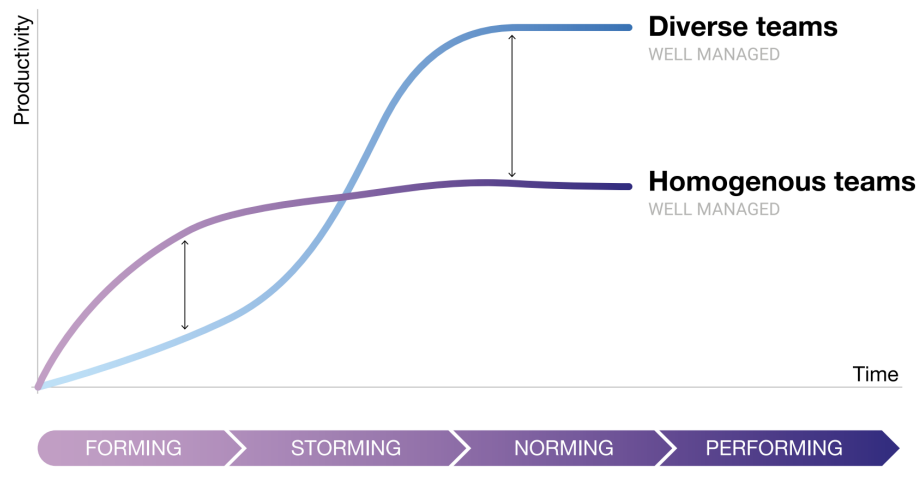
Impact of diversity on team performance

Figure 3: *Graph of the impact of diversity on team performance*

  A second case study by the University of Nebraska-Lincoln also showed that, given time, a diverse team could be as effective as a homogeneous team (Watson, 1993). This study took groups of diverse and non-diverse formations and analyzed their efficiency over 17 weeks. Homogeneous groups scored significantly higher during the early phase of the experiment and started to match and be superseded by the heterogeneous groups by week 17, as shown in figure 3 (Watson, 1993). As one can see, there is an apparent learning curve that diverse teams have to overcome to build chemistry. However, after the learning curve, diverse teams are proven to be as effective and interchangeable with homogenous teams.

  Efficiency is the key to a productive and effective team model. Homogenous teams can agree on a solution and pursue it with little to no disagreement. However, this methodology fails to address alternative solutions in echo chamber environments that may have never been considered. Diverse teams tend to think outside of the box as life experiences and knowledge severely outweighs that of a homogenous team with similar ideals and backgrounds (Ramthun, 2012). When the quality of work is analyzed, it is proven in the first two case studies that the diverse teams "had become more effective on the task elements of identifying problem perspectives and generating solution alternatives" (Watson, 1993, pg. 1). Diverse teams tend to have immense cultural and language learning curve struggles. Another case study by the University of North Texas, Arkansas State University, and Oklahoma University broke down the most pivotal reasons for diverse team failures: communication, culture, logistics, and technology. A homogenous team will always communicate effectively in the same language and with the same media platforms while having similar cultural experiences and backgrounds, being in close time zones to one another, and finally having similar levels of technology and tech experience (Kayworth, 2002).

  When WPI students go abroad in homogeneous teams, they miss out on the cognitive diversity a mixed team model could provide. Because project groups are composed of only WPI students, all the project's work comes from people with similar backgrounds and perspectives. WPI students may be exposed to diverse ideas and culture outside of IQP while exploring the project site, but when they sit down to do project work, it is no different from any other project

group at WPI. If an entirely separate background and perspective were available to the team through a collaborator, it could offer that cognitive diversity that leads to new ideas and innovation. The mixed team model provides the opportunity to expand WPI students' cultural perspectives and offer unique insight to project work while on IQP.

3. Methods for Research on Implementing a Mixed Team Model

The goal of this project was to enrich project work for WPI students by bridging the lingua-cultural gap experienced by WPI students while they work abroad in their Japan sponsored projects. We have provided a model for collaboration and partnership between two entities to create a resource for WPI students in future projects. Our objectives for completing this goal were the following:

1. Assessed previous mixed teams models used at other WPI project centers to identify any team practices that allow the students to experience a global way of learning and broaden their horizons with new perspectives on project work and different cultures.
2. Assessed the compatibility of various mixed team models with the Kyoto project center and local Japanese students and their academic calendar and requirements.
3. Created a general guideline on how to create and manage a mixed team model in a WPI IQP project center for directors and advisors.
4. Developed and proposed a model that effectively increases the engagement between WPI students and the local Japanese population.

3.1 Objective 1: Assess Previous Mixed Teams Models From WPI Project Centers

The development of any mixed team model requires a lot of moving pieces. The intricacies of how mixed teams work together are unique to each team. These intricacies can almost only be learned from first-hand experience. In order to begin thinking about any mixed team model between English-speaking WPI students and Japanese-speaking Seika University students, we first had to get a good understanding of some mixed team experiments that have taken place in the past. From the success or failure of different proposed mixed team models, we were able to best identify what we feel will be the most effective in enriching the project work for WPI students.

Table 1: Interviewees from past IQP project centers.

IQP Center	Directors	Advisors	Students
Bangkok	Esther Boucher Seth Tuler	Melissa Belz Jennifer deWinter	Allison Silvia
Mandi	Ingrid Shockey Gbeton Somasse		
Hangzhou	Wen Du Jennifer Rudolph Hangsong Pu		Lonna Neidig Nathanial Klingensmith
Moscow	Svetlana Nikitina	Olev Pavlov	
Cape Town	Scott Juisto		

We interviewed the WPI ten directors, three students, and three advisors of past IQP projects from project sites with mixed team models, as seen in the table above, to better understand how these teams have succeeded and failed in the past on a more personal level. In addition, we have learned how directors and advisors in the past have identified and addressed common issues so we can avoid those same conflicts. From the students we learned their views on mixed team models and how it helped them with their experience abroad.

Copies of the interview questions and preambles can be found in the appendices, Appendix A is for WPI advisors and directors, and Appendix B is for WPI students. We started with the IQP project center directors because they had the most experience organizing and developing mixed teams and their projects. First, we compiled a list of the twelve WPI current advisors of mixed team model centers we wanted to interview by going through the WPI project center location list. From this list, each member of our group emailed three advisors to email them and set up interviews, and we got ten responses.

At the end of each interview, we would ask for the contact information of advisors and students who previously participated in their project center, as they experienced the mixed teams first-hand. Through the advisors, we were able to form an entirely new contact sheet for interviews through this method. We repeated the process with directors for both students and advisors with slight variations to the emailing process.

We chose to contact participants from multiple mixed team models to compare and contrast several data sets. We organized the information we obtained through the interviews with the ten directors, three advisors, and three students into an excel sheet; the names of the interviewees can be found in Appendix D. We grouped five different project sites based on their similar structures and compared the main ideas of the responses to form eight central themes:

Table 2: *Themes from IQP interviews of previous mixed team models*

Mixed Team Model Utilized	Advisors: What to know
Language Barriers Faced	Directors: What to know
Cultural Barriers Faced	Students: What to know
Workload: Students, Advisors, Directors	Academic Calendar Scheduling

Comparing these themes gave us a sense of how much the collaborating team makes in each model. Knowing how significant value is added across each model helped identify the most successful practices. Because we collected the information through interviews, we recognize the research limitation of personal bias. They put more focus on the group's process than its outcome. On the other hand, we noticed that the three students we interviewed were slightly more biased because they were more inclined to support their previous work. However, we focused our questions on finding specific outcomes rather than personal anecdotes to leave less room for bias.

3.2 Objective 2: Assess Mixed Team Models' Compatibility with Seika University

After looking at previous mixed team models from WPI, we looked at how a mixed team model could potentially fit with Seika University. Seika University has scheduling restrictions and academic requirements that are not the same as WPI as they operate on a different four-term schedule. In addition, we needed to know if any form of a mixed team model will work with Seika University's goals to give their students a reason to want to work with WPI students.

Finally, we needed to know what, how, and where Jennifer deWinter, our sponsor, can implement the mixed team model at Seika University before going to the school and proposing a change in their curriculum. All the important links we used to find information about Seika University can be found in Appendix C.

To learn about Seika University's course structure and school year calendar to propose a plan that meets the needs of both WPI and Seika University, we gathered information by exploring their course calendar, given to us by Andrea Yuri Flores Urushima. From this calendar, we compiled a potential calendar for ID2050 and IQP by finding overlapping dates from their third quarter and our A and B terms. Next, we talked to Andrea about the programs run at the school in English to find where we could choose English-speaking students to work with the potential mixed team. From this, we looked at the course requirements for each program and found where best to implement our proposed mixed team model with Seika University.

3.3 Objective 3: Create a General Guideline for Mixed Team Model Implementation

The tertiary objective of this project was to assess the educational opportunity of this potential partnership for Seika University students. Furthermore, in this project, we attempted to understand how this partnership could benefit these Japanese students and to what capacity it could have been integrated into their current academic schedule. In other words, we needed to figure out the logistics of actually putting this model into motion.

While originally we believed the logistics to be reasonably straightforward, we quickly realized they were not. The complexities of organizing two separate curriculums far exceeded our expectations. We decided it would be best to talk to people who struggled with these issues in the past to better understand how to make a mixed team model work.

To accomplish this, we interviewed WPI affiliated individuals at the six select IQP centers previously discussed (Thailand, India, China, Russia, and Cape Town). Among these individuals were ten project directors whose insight on the project centers was key. These directors gave us insight into past issues they experienced while forming their models. This feedback was able to warn us of potential pitfalls and guide us on the type of solutions we should be thinking of. We specifically targeted directors for this segment of the project because of their familiarity and position on the highest functioning level of the IQP program at WPI. Their advice enabled our team to have a solid grasp of the intricacies of our project and how to approach it.

In addition, we collected data regarding the academic schedules from both universities to assess the potential of integrating both curriculums and what structure the project should have had. For example, since we wanted to ensure participation and effort on the end of the foreign counterparts, then we discovered that other project centers had accomplished this by offering course credit rather than making it voluntary, such as a club/circle. This example would have appeased both sides of the partnership as Seika students would get course credit, and WPI students would get a sufficient amount of participation from their foreign counterparts.

Most of this information was gathered by interviewing students and faculty of interest. The information we collected from the previous IQP reports and the interviewed individuals enabled us to analyze how previous mixed projects have functioned and failed thoroughly. We then synthesized the gathered information and manifested a recommendation for the Kyoto, Japan IQP project center further described later in this report.

3.4 Objective 4: Develop and Propose a Model for the Kyoto, Japan IQP Project Site

We determined the most beneficial aspects of our specific project center location from the interview data gathered. Our data collection consisted of semi-structured interviews with

three WPI students, ten directors, and three advisors that have experience working with mixed teams similar to the one that our group is looking to create. By analyzing how mixed teams have been formed in the past, we have been able to identify which aspects have led to failure in past models and what we feel would lead to failure in our specific project. For example, we looked at the eight themes identified earlier compared to Japanese culture and other barriers in Japan to prevent failure or unforeseen issues in our model. From those themes, we understood what problems other project centers encountered beforehand and incorporated aspects into our model to mitigate those problems. On the other hand, we also analyzed what factors some mixed team models have found to be productive and lead to success. By analyzing these aspects that we feel have led to success, we can look at what we think would also lead to success in our specific project to increase our model's chance of success.

4. WPI Director, Advisor, and Student Interview Findings

After interviewing directors and advisors from WPI project center sites with different types of mixed team models, we determined the best parts of each model. We identified the two types of mixed team models and the themes we found from the interviews. These themes include what to do as a director/advisor and how to make a mixed team. We go into detail about the barriers faced while abroad on IQP and how to direct and advise a mixed team model. We then determined the structure of the IQP term in terms of the calendar schedule as there were many challenges to getting the teams to have similar schedules.

4.1 Types of Mixed Team IQP Groups

Currently, seven project center sites at WPI utilize a mixed team model that range from institutional-based models where students receive credit to informal and volunteer-based partners. In an institutional-based mixed team model, teams of WPI students partner with local university students at the project site to form a team. Institutional-based mixed team models are found in the Thailand, India, and Hangzhou project centers. An informal mixed team model is usually volunteer-based. The volunteers do not form teams, but rather these students/volunteers help during their free time for a specific form of compensation. This model is in use in Russia and Cape Town; their volunteers are often called co-researchers.

Table 3: *Themes from interviews with WPI Directors, Advisors, and Students from mixed team model IQP Project Centers*

Themes	Bangkok, Thailand	Mandi, India	Hangzhou, China	Moscow, Russia
Founded in	2007 by a WPI Faculty member	2013 by a WPI alum	2019 by a WPI Faculty member	2013 by a WPI alum
Institutional or Informal-based	Institutional - developed their own form of project based learning that was formatted from WPI's IQP called the Interactive Science and Social Project	Institutional - developed their own form of project based learning for their third-year students that was formatted from WPI's IQP	Institutional - integrated project based learning into their management major degree requirements	Informal volunteer based

Where do students come from	Works with Chulalongkorn University's Chemistry Department	Works with India Institute of Technology	Works with Hangzhou Dianzi University's Management Department	Works with students picked by professors from Financial University
Compensation	Receives 6 credits towards their degree	Receives credit towards their degree	Receives 1 credit towards their degree	Receives a certificate of completion given at a ceremony at the end of IQP
Teams	4 WPI students 4 Thai students who work full time on the project with WPI students	4 WPI students 4 IIT students who work full time on the project with WPI students	4 WPI students 1-2 HDU students who help with interviews and the business aspect of the project for WPI students	4 WPI students 1-2 FU students who help with interviews and the business aspect of the project for WPI students but do not meet as often
Past models utilized	None	None	Used to be informal volunteer based, had a better turnout with students that spoke decent english that wanted to practice speaking English	None
Scheduling	Semester based schedule - Thai students implement the project when WPI students finish IQP	Semester based schedule - IIT students implement the project when WPI students finish IQP	Semester based schedule - HDU students implement the project when WPI students finish IQP	Semester based schedule - FU students complete their work when WPI students do and receive a certificate of completion at the end of IQP
Preparatory classes	Yes, WPI students meet once a week for 14 weeks to learn basic survival Thai language and culture class that counts for 30% of their ID2050 grade	No	Students can choose to take Chinese language or culture classes that can assure their spot at the Hangzhou, China project center but it is not required	Students are required to participate in HU 2230/INTL 2520 Russia Ready: Language and Cultural Context the term before going abroad

For more detail about these project centers see Appendix D-G.

4.2 Barriers Faced by WPI Students, Advisors, and Directors While on IQP

WPI students' mixed team model counterparts help WPI students with the language and cultural barrier by assisting them with interviews and navigating the community. While abroad, Allison Silva, a student from WPI who completed her IQP in Bangkok in C '20, said WPI students experience culture shock, "having a team of students that from other places is a bit of a culture shock in terms of adjusting to their work style" (A. Silvia, personal communication, November 16, 2021). She also talked about how it was nice to have a local student there who

could help her experience the "culture from a local perspective instead of as a tourist" (A. Silvia, personal communication, November 16, 2021). The biggest culture shock is not the culture itself but how the local Chulalongkorn students behave (I. Shockey, personal communication, October 29, 2021). Asian cultures are very reserved, have higher respect for their professors and elders (G. Somasse, personal communication, November 4, 2021). They also have different expectations from a team. Gbetonmasse Somasse said they defined teams as working on the project individually and meeting to put it together. This shocked WPI students, and they had to adjust to make their teams work by defining what they wanted from a team and their expectations.

For students and advisors, the language barrier within the university is almost zero at the India Institute of Technology, as English is the primary teaching language at IIT. Even local students have trouble communicating with residents because there are many different dialects between students and residents. The cultural barrier between students comes from their differences in values. As stated earlier, Asian cultures are more reserved, show more respect, and have different definitions of teams. Indian culture is also primarily vegetarian (I. Shockey, personal communication, October 29, 2021), so WPI students do not eat much meat when eating in the cafeteria at the university and have to travel to find food that reminds them of home. This showed students how to embrace other cultures and live globally.

The Russian students come from the Financial University's International school, so they are proficient in English, making the language barrier between students and advisors almost zero. These students go with WPI students to conduct interviews and translate and provide the business competency and financial projections needed for the projects as they are business and financial-based. As for the culture barrier, the Russian students are excellent hosts to WPI students. Professor Svetlana Nikitina states that Americans and Russians hold stereotypes and prejudices towards each other, and through this mixed team model, they can confront those stereotypes. In addition, through the mixed IQP teams, students can expand their global competency.

4.3 Directing and Advising Mixed Teams

Mixed team models give students a unique cross-cultural experience, but combining students from different universities is a challenge for everyone involved, including students, advisors, directors, and administrations. Students, directors, and advisors face communicative and logistical problems in each project center while navigating a language and cultural barrier. The goal in implementing a mixed team model is not for a better project outcome but a better educational experience (J. Rudolph, personal communication, November 18, 2021). Jennifer Rudolph, the founding director of the Hangzhou mixed team model, said all mixed team models are works in progress, but they help WPI students with a wide range of problems faced while on IQP abroad.

On top of this, mixed teams can give students a sense of global competency. If WPI students are going abroad for IQP, they need to be getting the cultural experience that warrants WPI calling IQP an international global project (J. Rudolph, personal communication, November 18, 2021). Those who want to give students a better global cultural learning experience and are not worried about the workload should implement a mixed team model. IQP should impact students culturally the same way students impact the community. The mixed team model makes it better for students where the culture is very different because it fosters a more inclusive environment.

4.3.1 Directing Mixed Team Models at WPI Project Centers

Advising and directing a mixed team model is challenging because more work goes into creating and advising a mixed team (I. Shockey, personal communication, October 29, 2021). Ingrid Shockey, Jennifer Rudolph, Wen Du, and Gbetonmasse Somasse have all stated that they want other project centers to use a mixed team model. They know directors are hesitant because it is more work on their part, such as more training and learning a new language, but it is worth it for the students. The main goal of a mixed team model is not to make the project more manageable but to give the students a global mindset.

For directors, most of the work will accumulate while attempting to create a mixed team model initially which requires a lot of logistical work for the director. They will have to decide which type of mixed team model will best fit their specific project site which could be institutional-based or informal-based. If the director chooses to pursue an institutional-based model, they will have to first find a university whose academic schedule lines up with WPI's so that students will have a significant amount of time to complete their project work. With WPI's unique bi-mester system this can prove to be a challenge that may limit some options for the director while looking for a local university to collaborate with. Once a university is able to be identified, the director then has to look at the curriculum at the university in effort to match up local students with WPI students for the duration, or at least for a significant amount of time, of IQP. A faculty champion is required, who is usually a faculty member at the local university who is able to handle some of the logistical work on their end. Mixed team models increase their chances of failure when the local university does not maintain interest at a faculty level, if the teams are not given enough time to work together, or if they are not well managed. Each of these considerations must be made before students are sent to work in a mixed team at a WPI project center

Informal-based teams require different logistical work to get started. Because you are no longer working with a partnering institution, there will be less pressure to set logistical work because you are the only one running the program. That being said because you are the only one invested in organizing this program you will be doing all the logistical work. This can be helpful if you're looking for a low risk low reward type of situation. The amount of work needed to make this model succeed is fairly low compared to the institutional based model, however the reward for students will only be as great as you make it. If the collaborators are recruited and managed in a high quality fashion, students can get that life-changing experience quite easily. On the other hand if the collaborators are lazy or impolite they can easily ruin a students IQP experience. When using an institution they become your primary resource, however informal based models use the project site's community as the primary resources. Instead of matching course calendars and meeting with institutional faculty, directors of informal based models will be finding creative ways to recruit, organize, and manage their collaborators. You are no longer working with only university students so academic credit might not be a viable motivation to collaborators. If the community is invested in the project and is willing to volunteer for community service that might seem perfect, just make sure the level of commitment is maintained throughout the project and the collaborators don't leave your students stranded halfway through the project. One possible incentive we explored was the use of certificates, this can often recognize achievement and effort on the collaborator without being a huge drain on project site resources. Finally, if you are recruiting strangers with no affiliation to a trustworthy organization give them some sort of safety screening or background check. While most volunteers or collaborators are good hearted, you can never be too careful when entrusting your

students' safety to someone else. Each of these is a key step that should be taken by all IQP directors pursuing an informal based mixed team model.

4.3.2 Advising Mixed Team Models at WPI Project Centers

Making a mixed team model means working closely with the partner university on a commitment level (J. Rudolph, personal communication, November 18, 2021). Directors need to develop a structure that allows for contingencies of partner students' schedules if they are not doing it full time, and this process can take a long time. For example, Jennifer Rudolph of the Hangzhou project center took four years to implement her mixed team model with HDU Management Major students. After her first year of implementation, she did not tell us how but she figured out how to run a mixed team properly and what to change.

The workload for an advisor is greater because the size of a mixed team is usually more significant than a homogeneous team. For example, a regular IQP cohort is 24 students, but with a mixed team, there could be more than double the amount of students in a regular team (M. Belz, personal communication, November 16, 2021). With these bigger teams, Gbetonmasse Somasse also said it was an advisor's role to make sure the teams feel like one team instead of two smaller teams, so an advisor has to push for team collaboration and bonding. In addition, advisors have to work with other co-advisors from the local universities. They can have differing opinions on the project and give different advice to students who come to them for help, making different opinions harder to navigate. Esther Boucher-Yip said local advisors tend to direct their students' projects more, but WPI advisors tell the WPI students that it is their project, and they give advice instead of directing. The advisor is responsible for communicating with the other advisor of the foreign school to direct the students on the correct path. That being said, being a good team is not just for the students; if the advisors do not have clear goals, the projects will not have clear goals.

Usually, when advising IQP, advisors are told that as an advisor for IQP, they are not expected to know the language (M. Belz, personal communication, November 16, 2021). However, when working with mixed team models, it has been advantageous for the advisors to know the language to understand what is happening in the team and their basic needs, so language affects advisors and students. The language barrier has proven to be a central challenge in creating mixed team models. Other project locations have reported that it can be more challenging when the advisors are not used to the foreign language at their specific project location. In addition, advisors or students that we interviewed who had no language experience agreed that they had to rely on their local counterparts to navigate them through local language encounters, such as sponsor meetings; this creates tension and makes it harder for everyone involved.

4.4 Team Practices that Allow for a More Effective Global Learning Experience

Many aspects make a homogenous team efficient. These aspects still apply when working in diverse teams, such as group collaboration before IQP, spending free time with the teams' counterparts, and communicating expectations. Most of the WPI project center directors agreed that it was highly beneficial to their students who worked in a mixed team to spend some of their free time getting to know some of the foreign students they were working with. Ingrid Shockey recommended that to foster a good team dynamic, students should meet with their local counterparts before going abroad on IQP to form bonds before meeting for the first time. Seth Tuler suggested that the best way to implement this is to have students work together during ID2050 as much as scheduling permits. This will give the students an idea of what they are

getting into, what the project will be and allow them to meet their team and communicate before completing the project. For example, in Bangkok, they have their preparatory course, and it did not mix well with ID2050 because they were being taught different things. In addition, their Bangkok co-advisors did not want their students mingling with WPI students because they thought their students would steal the WPI students' work instead of doing it themselves.

The time together should not stop after ID2050; it should only increase during IQP. By increasing the amount of time spent with the foreign students, the WPI students could experience more of the culture and lives of the people living around the area while living in another country. WPI students also reported that going out with the local students increased the productivity of the group due to the fact that communication felt easier.

Another key to having a good team dynamic is setting rules and defining everyone's roles (G. Somasse, personal communication, November 4, 2021). Different cultures look at teamwork differently; for example, Ingrid Shockey, the director of the Mandi, India project center, told us how in Asian cultures, they define teams as doing all the work together at the same time instead of delegating different sections and coming back to put the sections together. Since students work in a diverse team, they should sit down and determine what they expect from this team to go into the project with the same viewpoint.

Another aspect of teamwork is the willingness of students to participate and help throughout the project. Most WPI project center directors claim that students who receive some credit for their work are more willing to put more effort towards the project than those who do not receive credit. For example, in Bangkok, they receive credit for their work, and they work 9-5 hour days when WPI students do not. However, in Russia, where students only receive a certificate of completion, the students are not as motivated and can drop out of the project at any time, leaving WPI students with nothing.

Even with participating and willing students, when interviewing residents, Gbetonmasse Somasse said the IIT students take charge during interviews but left out important information when explaining the interview to WPI students. Local students tend to lead the interviews as they are the ones who speak the local language. However, when explaining to their WPI student and advisor counterparts, they have been known to leave out important information and give a basic explanation of what happened during the meeting or interview. This can cause confusion and tension because WPI students are usually given the role of writing the final report, and not having all the information can make this process harder.

4.5 Comparing Course Calendars Based on Director Interview Feedback

It is only natural that different countries to operate on a different schedule for the traditional "school year," and Japan is no exception. We found that most Japanese universities start their first semester in summer break for American students. With the first semester beginning in April, students usually finish their final exams in the last week of July or early August. After finishing exams, Japanese students go on their summer break into late September. This means that before Japanese schools even look at the next semester, American students have been in school for close to a month. Once the second semester starts, Japanese students work through January, only taking a short break to celebrate the new year at the end of December. This is very different from the traditional American course calendar and even more separate from WPI's unique four-term calendar.

> ❖ Look at both calendars (WPI and local university)
>   ➢ Consider ID2050 and IQP (14 weeks of potential overlap)
> ❖ Record important dates like breaks and long periods of overlap
>   ➢ Make sure there is a significant amount of overlap for the students to have enough time to complete their project   *See Figure 4 (p 28)*

4.5.1 Finding Common Ground

Our interviews found that a critical component to making this project succeed is finding the time when both Japanese students and WPI students can work on the same project. This means that WPI and the collaborating Japanese University must be in session simultaneously.

The IQP and ID2050 calendar will have to match up with the other school. Therefore, the team's projects must be decided before ID2050 begins. It is crucial because WPI students need to understand the project's background during ID2050. On the other hand, Japanese students do not need to understand the project prior to IQP, as they have no similar program to ID2050 in place.

Usually, it would be pretty tricky for us to match up a calendar to another one completely separate. Luckily, our main interest in collaboration has recently switched to a four-term calendar. We initially thought WPI's unique calendar would only provide more challenges than traditional semester calendars. However, with Seika's recent switch, WPI's calendar perfectly fills all the gaps. An example of both calendars overlaid on top of eachother can be found below in Figure 4.
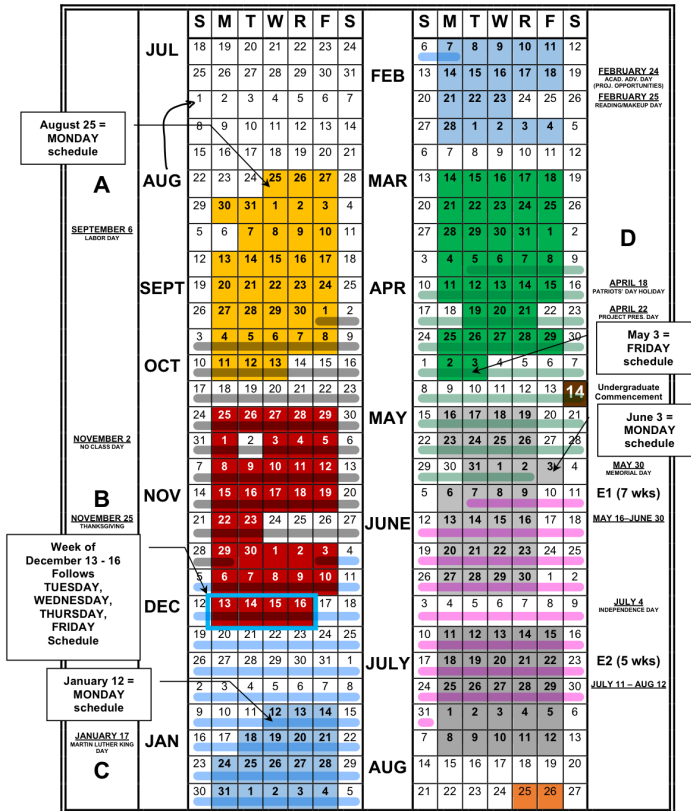
Figure 4: WPI's four term calendar with Seika University's four term calendar highlighted over it. Highlighted in black is Seika's third quarter that we will utilize in our proposed model. Highlighted in blue is Seika's fourth quarter, the gap between is their summer break, highlighted in green is their first quarter, highlighted in pink is their second quarter, and the gap between pink and black is their summer break. The yellow and red blocks are WPI's A term B term, we use both respectively, in our proposed model we put ID2050 in A term and IQP in B term. The blue blocks are WPI's C term, the green is D term, and the two gray blocks are the summer terms E1 and E2.

4.6 Decision Making Process

Deciding whether or not a mixed team is possible at specific locations is extremely challenging. The logistical work needed to create a successful mixed team is intensive and unique to each different project center. The two types of mixed team models that we have identified, institutional-based and informal-based, make sense in certain areas while they may be impossible in others. This being said in some areas it may not make sense to create a mixed team. If the best option for a project center is to form an institutional-based model, there must be a considerable amount of overlap between course calendars. If the mixed team is not given enough time to take in all the diverse perspectives, then it will not be able to perform at a high enough level.

However, on the contrary mixed team models are extremely useful for students participating in any global study program. Mixed teams allow students to experience a more global learning style that can work to enrich project-based learning. It also allows students to immerse themselves deeper in the culture around them. By working alongside local students, it is easier for WPI students to branch out and engage with their surrounding environment. Our group

has also heard overwhelming support, from WPI project center directors who have mixed team models, to expand more mixed team models to other WPI project centers. They agree that any type of mixed team model has a great impact on the student work, as well as helps to mitigate any problems that they may experience due to any lingua-cultural barriers.

5. Recommendations for Future Mixed Team Models

For advisors and directors trying to start a mixed team model, we discuss how to develop a mixed team model most efficiently. From the interviews, we suggest the following to enhance teamwork:

❖ Meet, communicate, and spend time together before starting the project abroad (during ID2050)
❖ Many types of mixed team models can function in unique fashions, and there is no standard for running one. Many factors have to be considered before a specific mixed team
  ➢ Communication about expectations and team dynamics before starting the project
  ➢ Consider making a team contract, so expectations are well defined
  ➢ Spending some free time with team counterparts while abroad
❖ Identify faculty champions, define relationships, etc.

5.1 Developing a Mixed Team Model For Implementation at any IQP Project Center

Many types of mixed team models can function in unique fashions, and there is no standard for running one. Instead, many factors have to be taken into account before a specific mixed team model can be proposed for a specific mix of people, especially in a world as diverse as ours. People worldwide live very differently, which means that culture and language play a significant role in picking the right model for a mixed team depending on the situation.

These students will spend a considerable amount of time together over the course of several weeks to complete a project or task given to them at the beginning of the project. By working with other students from different parts of the world, they will all be able to increase their diversity of thought and expand their knowledge of how to tackle problems they are faced with. They are not alone; however, each school that provides students to work in these mixed team models will also have an advisor in charge of overseeing the project work and ensuring their students perform as needed. Different models can allow multiple advisors per group or even one advisor from one school that leads various groups. However, the role of the advisor is to keep the group on task. Students report to their advisors at least once a week to ensure that the project is continuing to head in the right direction or adjust it if needed. The advisor is the individual to whom students should feel comfortable coming to and expressing a problem with their own or international team members. Students we interviewed have reported that sometimes one group of students may think that the other group is not pulling their weight. The solution to this problem was to discuss with their advisor, who could get the foreign advisor to push their student to participate more effectively. The advisor should be the one they go to in order to alleviate any issues that may be inhibiting the efficiency of the project.

The goal of mixed team models is to allow the students to experience a more global way of learning and broaden their learning style. By working with students from different cultures, both sets of students are challenged to adapt and overcome each challenge at hand and learn from

the different techniques that other students demonstrate. This is an improvement from a homogenous team because it allows more perspective to be taken into account in every decision that can work to alleviate issues that homogenous teams may have faced otherwise.

5.2 Proposed Model for the Kyoto, Japan IQP Project Center

 While our sponsor is certainly interested in collaborating with several universities in Kyoto, Seika University has expressed the most interest in collaborating with WPI. On top of that, their calendar combines with WPI's for the longest period of time. Therefore, while it is certainly possible to develop a joint calendar for all potential partners, we decided to first focus on Seika University. So, for our sponsor, we talked about the most significant finding of our project, the mixed team model we recommend based on all of our research, how to make it work, and what the schedule will look like.

 When interviewing past IQP directors who worked with mixed teams, we've identified a key central issue—getting the calendars to line up correctly. Out of 3 institutional based models we've researched, every single one of their project directors has shared their complaints on aligning academic calendars. We knew this would be a challenge, so our team came up with multiple ideas based on our interviews after studying both calendars. Our sponsor and team discussed several topics, such as moving Japan IQP to a separate term, offering ID2050 as a summer course, etc. In the end, we decided it would be best to keep Japan IQP scheduled for B-term. Although no model proposed realistically should solve every concern addressed in this project, we have derived one potential solution which should alleviate most hardships this international collaboration poses. Therefore, we have concluded that an effective partnership with Japanese universities should look like what is outlined below.

 WPI students would spend the extent of A term (in the case of an A-B IQP) being assigned their projects and teams, then a preparation course to understand the project and its intricacies. We realized that Seika's third-quarter starts right before WPI students go on their week-long break between A and B term. This would give Seika students the perfect amount of time to catch up on all the completed prep work done by WPI students in ID2050. IQP would begin on October 25th, right after the A-B break. This also provides a month-long period of time where both WPI students and Seika University students would be in Japan doing project work to collaborate and interact with each other until November 29th, when Seika students complete their third quarter. This month could provide many exciting possibilities from project work and cultural exchange perspectives. Additionally, students would be making friends with people their age local to the area. This would provide the opportunity to explore the area and culture with a true understanding and less like tourists. Students would have real hands-on experience working with students from another education system entirely to give them a new perspective and insight on project work and academics.

 The ending of the Seika term leaves two weeks left in the IQP term. This is perfect because WPI students spend the last two weeks focusing on their final report. From our interviews, we know that usually, the collaborating members contribute less towards the writing of the final report. This is probably because the report is specific to WPI guidelines and curriculum. This section of the project mostly falls on the WPI members, and it seems unnecessary to force Japanese collaborators to contribute. We, as a team, believe this schedule to give WPI students and faculty the perfect amount of breathing room to complete WPI particular objectives. While that breathing room is available, this schedule also ensures ample time for preparation and collaboration with Japanese students.
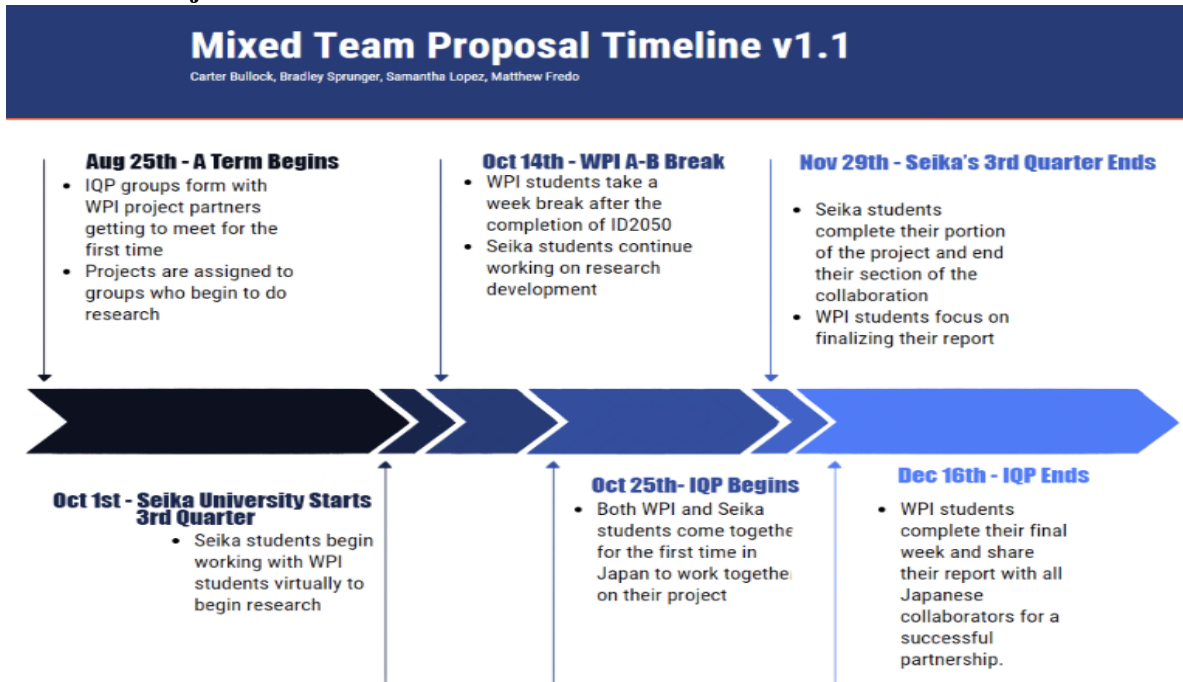
5.2.1 Project Calendar Outline

Figure 5: *Proposed calendar timeline for Japan IQP.*

From figure 5, there are five important sections of time in WPI's A and B terms that align with Seika University's third quarter. The dates are as follows:

August 25th - October 1st: WPI students form their IQP teams and start to understand the nature of their projects. During this time, students take ID 2050 and begin to generate a comprehensive depth in the subject along with a general plan of action of how students wish to complete their objectives.

October 1st - October 14th: At this point, Seika University students come on board to the project as their academic year starts. Seika students get informed on the intricacies of the project and prepare for the arrival of WPI students in Japan.

October 14th - October 25th: WPI students enter their week-long break between terms and prepare to travel to the IQP project center. Seika University students continue their preparation course (similar to ID 2050 at WPI).

October 25th: - November 29th: Over a month-long period, most of the project gets accomplished as WPI and Seika students are together working each day out of their assigned project center locale. WPI students are encouraged to interact with their new environment with assistance from their Japanese counterparts and the latest additions to their team.

November 29th - December 16: Seika University students go on break after completing their assigned project component during this final period. WPI students then work between themselves to finalize and write up the project. At this point, WPI students should have completed all their objectives and the project, with the assistance of Seika University students, and the project concludes.

6. Conclusion

Through our study, we have found multiple types of mixed team models, each with their pros and cons. However, in the end, each of these models was developed with one goal in mind; to provide a more diverse global learning experience for WPI students and their collaborators. In order to get around the lingua-cultural barrier between the English-speaking WPI students and the non-English speaking local population, mixed team models provide the teammates with a more diverse education that can help alleviate those issues that it can cause.

No matter what model a director chooses to develop, it will require more logistical work from that director, advisors, and students. However, all this logistical work pays off in a life-changing experience for students to work with someone from a different country. This experience provides a cultural exchange not found anywhere else in the WPI curriculum and gives an opportunity for a new perspective to project-based learning. We hope that all directors and advisors consider this type of experience that is well worth the effort required to organize and implement it.

That being said, we as a team would be excited to see the ideas of mixed team models explored more in depth. Our team only researched what has been done previously, meaning that there are plenty of models that have never been tried before. We would be curious to see if using different institutions besides a university, such as a business or a charity, would yield less logistical work for directors. Ideas like that are their own individual studies that are beyond the scope of our project. However, following this report mixed team models will continue being implemented in WPI project centers and our hope is that directors are able to explore these possibilities with their own project groups.

Following in the direction of our own director and sponsor is what led us to recommend what we believe to be the best option for developing a mixed team model in the Kyoto project center. Having interviewed stakeholders in other mixed team models implemented at WPI, we suggested an institutionally based model with Seika university given the structure, motivation, and pre-existing relationship already established. However every project site is different so our team looks forward to seeing future models developed.

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Appendices

Appendix A: Interview Questions for WPI Advisors/Directors
We are a group of students from Worcester Polytechnic Institute in Massachusetts. We are conducting interviews with WPI faculty for our Interactive Qualifying Project. Our goal is to understand the complications of foreign interactions with lingua-cultural barriers during your previous IQP projects that used mixed team models that you advised, and your insights will be extremely useful to our project.

Your participation in this interview is completely voluntary and you may withdraw at any time. Your responses can be kept confidential upon request; however your background and perspective would be useful to our readers for context purposes.

If interested, a copy of our results can be provided at the conclusion of the study. Your participation is greatly appreciated.

Feel free to contact us with any comments or questions.
Contact Information:
       Our Project Alias: gr-MixedTeams-K21@wpi.edu
       Our Advisors: jdewinter@wpi.edu, mbelz@wpi.edu

1. What can you tell us about the types of mixed team models you have worked with?
2. What was your overall impression of the model in supporting student work?
3. Was there a major culture shock for WPI students when working in a foreign country?
4. How well do the teams handle the workload? On a scale of 1-10, how invested would you say the average team is in their project?
5. Were there any clearly defined roles within the groups you advised?
6. What are some struggles that your teams showed with the partnership?
7. What are some aspects of IQP you think the teams you advised enjoyed?
8. What is one thing you think your teams could do better?
9. How often do your students struggle with language while on project?
10. Has a Language Barrier ever caused issues for you as an advisor?
11. Would you want to see more project centers experiment with this model?

Appendix B: Interview Questions for WPI Students
We are a group of students from Worcester Polytechnic Institute in Massachusetts. We are conducting interviews with WPI students for our Interactive Qualifying Project. Our goal is to understand the complications of foreign interactions with lingua-cultural barriers during your previous IQP experience and your insights will be extremely useful to our project.

Your participation in this interview is completely voluntary and you may withdraw at any time. Your responses can be kept confidential upon request, however your background and perspective would be useful to our readers for context purposes.

If interested, a copy of our results can be provided at the conclusion of the study. Your participation is greatly appreciated.

Feel free to contact us with any comments or questions.
Contact Information:
    Our Project Alias: gr-MixedTeams-K21@wpi.edu
    Our Advisors: jdewinter@wpi.edu, mbelz@wpi.edu

1. Can you tell us what sort of team model you had. How many members? What were the students like?
2. Were there assigned assigned, or was it an unspoken self sorting?
3. What were some things your team did well?
4. What were some things your team could have done better?
5. Did you enjoy working with students from another culture and place?
6. Did you find it challenging? If so, what parts specifically?
7. What were the benefits of working with your team?
8. What was the biggest "culture shock" to you when traveling abroad?
    a. Did your team mates from your IQP location help you navigate the city?
    b. Did they help you translate and interview residents?
    c. How would you have done overall on the project without their participation?
9. What good/bad stories can you tell about difficulty in interacting with a foreign environment
10. Has a Language Barrier ever caused issues for you as a project member?

Appendix C: Helpful Seika University Resources
- Seika University Human Environmental Design Program - programs that WPI can try to insert the IQP curriculum
    - https://www.kyoto-seika.ac.jp/edu/human-environment/
- Seika University Calendar
    - https://www.kyoto-seika.ac.jp/campuslife/calendar.html
- Seika University International Exchange/Study Abroad Program
    - https://www.kyoto-seika.ac.jp/campuslife/ie/
- Seika University's Faculty of Humanities - potential contacts to pose as Faculty Champions
    - https://www.kyoto-seika.ac.jp/edu/humanities/career.html

Appendix D: Case study of IQP project center Bangkok, Thailand
        WPI's Bangkok, Thailand IQP project center, founded in 2007, works with Chulalongkorn University's Chemistry Department to form a formal institutional-based IQP mixed team cohort. With the inspiration of WPI's IQP philosophy, Chulalongkorn University created their version of project-based learning, called the Interactive Science and Social Project. Their students receive a social science project-based learning experience and six credits for participating and helping on the project along with WPI students. In addition, Chulalongkorn runs a semester-based schedule, while WPI runs on a four term schedule; WPI's IQP lands in the middle of their semester, and Chulalongkorn students continue the project when WPI students leave. Mixed teams are formed with four WPI students paired with four Chulalongkorn students to create a group of eight. WPI students take roughly 40 hours of basic survival Thai language and cultural learning to combat the language in preparation for traveling to Thailand; this course counts as 30% of their ID2050 grade. Chulalongkorn students also help WPI students with the language and cultural barrier by assisting them with interviews and navigating the community.

Appendix E: Case study of IQP project center Mandi, India

WPI's Mandi, India IQP project center, founded in 2013, works with the Indian Institute of Technology to form a formal institutional-based IQP mixed team cohort. One of the university founders implemented the mixed team since he was a graduate of WPI. IIT also created their version of project-based learning and made it part of their curriculum for third-year students to complete. In addition, because WPI runs a four term schedule and IIT runs a semester schedule, IIT students continue working on the project after WPI students end their IQP.

Appendix F: Case study of IQP project center Hangzhou, China

WPI's Hangzhou, China IQP project center works with Hangzhou Dianzi University to form a formal institutional-based IQP mixed team cohort. Jennifer Rudolph had been trying to establish a mixed team model at Hangzhou. It took her four years to get it off the ground after going through communism logistics. The founding site director Jennifer Rudolph attributes the successful implementation of mixed teams at the Hangzhou, China project site in 2019 to the willingness, enthusiasm, and persistence of HDU to integrate project-based learning into its curriculum meaningfully. Before implementing the formal mixed team model, the site utilized an informal mixed team model of volunteers from the Management Major at HDU. They helped WPI students solely with translation to practice their English skills. HDU has started its project-based learning project, making it a graduation requirement for Management Major students. These students receive one out of the eight credits they take in a semester. Since they do not have enough time to work on IQP full time, their main task is helping WPI students translate. A typical WPI cohort consists of 24 students, and HDU contributes 30-50 Management Major students a year, meaning there are more HDU students than there are WPI students in a mixed team. From previous years, WPI has learned the English skills of the Management Major students range from really good to not too good. Therefore, HDU has decided to remove the credit that comes with the mixed team so students from the Management or Business Majors can volunteer to practice their English skills. Jennifer Rudolph thinks volunteering will be more successful because the students will be more willing to participate and practice their English skills.

Appendix G: Case study of IQP project center Moscow, Russia

WPI's Moscow, Russia IQP project center works with Financial University to form an informal institutional-based IQP mixed team cohort. In this formal model, the students from Financial University do not receive credit for their work because it is volunteer-based. Instead, professors handpick the students they believe are the right candidate to help in a WPI mixed IQP team cohort while still completing the rest of their school work, which includes six classes per semester. Then, at the end of the project, instead of credit, the students receive a certificate of completion signed by WPI president Laurie Leshin and their president at an award ceremony that their WPI counterparts attend. The Russian students come from the Financial University's International school, so they are proficient in English, making the language barrier between students and advisors almost zero. These students go with WPI students to conduct interviews and translate and provide the business competency and financial projections needed for the projects as they are business and financial-based.