

Cross-Cultural Connections Project



By Fernanda Cálix, Mahmoud Ahmed, Cierra O'Grady, and Aritro Deb Sarker



WPI

Cross-Cultural Connections Project

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by
Fernanda Cálix
Mahmoud Ahmed
Cierra O'Grady
Aritro Deb Sarker

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Professor Althea Danielski

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Abstract

This research analyzes the well-being of international students at Worcester Polytechnic Institute (WPI) and offers suggestions to promote intercultural interactions between international and domestic U.S. students. International students frequently encounter challenges such as cultural adjustment, language barriers, and limited social support, which can have negative effects on their well-being. We performed surveys, interviews, focus groups, and research on peer institutions to identify the major factors affecting international student well-being at WPI. Key findings showed a need for more intercultural events, social spaces, peer mentorship, pre-arrival support, IQP preparation, and better integration of graduate students.

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Executive Summary

The growing international student population in the U.S. underscores the importance of supporting their well-being and facilitating cross-cultural connections on university campuses. This project aimed to provide Worcester Polytechnic Institute (WPI) with recommendations to improve international student well-being and domestic student cross-cultural competency. Through surveys of 671 WPI students, interviews with staff, and focus groups, major factors negatively impacting international student well-being were identified. We found that students of WPI need more intercultural events, hangout spaces, peer mentorship programs, pre-arrival support, IQP preparation, and better integration of graduate students.

Methods

We adopted a systematic mixed-methods research design to explore the issue of well-being among international students at Worcester Polytechnic Institute (WPI) and discover the best avenues to cross-cultural communication and relationships. Surveys were circulated to seek quantifiable and qualitative data from both international and U.S. students at WPI on parameters like intercultural exchange opportunities, stress, feelings of loneliness, accessibility to resources, and overall satisfaction with support systems within the university's setup. This enabled us to identify the main factors affecting international students' well-being and the main obstacles to forming intercultural connections.

For a more nuanced understanding, we also conducted semi-structured interviews and focus groups with both domestic and international respondents to the survey. These discussions, enriched using narrative, revealed profound insights into the personal experiences and challenges of the students. This narrative approach added a unique dimension to the statistical data collected, enhancing the depth of our research and informing our conclusions. We also compared the existing resources at WPI with those of peer institutions, identifying best practices and areas for improvement. These analyses were based on a review of public information and interviews with various staff and faculty from WPI and other universities.

Based on these findings, programs for developing intercultural interaction among international and domestic U.S. students were suggested, and the foundation of a pilot implementation was planned. This included the design of a web application meant to facilitate

intercultural connections, with a comprehensive database schema created in preparation for the app's development. Every method of research was strategically selected in a manner that could fit some of the objectives in relation to how effectively they would discuss the identified issues and set a base for actionable solutions to improve life for students at WPI.

Findings and Recommendations

WPI prioritizes personal well-being to ensure a balanced experience for students, faculty, and staff. A study of 671 students, 4 staff members, and 5 focus groups was conducted to address the major obstacles to this goal. The findings resulted in recommendations to improve the well-being of international students and the intercultural competence of domestic U.S. students at WPI.

Events and Hangout Spots

Our focus groups revealed that students, particularly international students, desire more intercultural events and casual hangout spaces on campus to organically meet others from different backgrounds. Five participants mentioned meeting people through clubs or events, and four said there should be more of these opportunities. Three focus group participants and staff interviewees also emphasized the importance of dedicated hangout spaces, such as lounges or areas with puzzle tables, to foster connections.

We recommend WPI host more intercultural events with free food from diverse cultures to incentivize attendance and cultural exchange. Events involving shared challenges or physical activities may also be effective in forming long-lasting bonds. The university should create more casual hangout spaces—potentially an international student lounge in the International House—to provide low-stress areas for cross-cultural mingling.

Graduate Student Inclusion

WPI should improve communication with graduate students about campus events and educate student-run clubs and organizations about graduate student laws and funding. International graduate students, who make up 57.86% of total graduate students, are often the most alienated group on campus. To address this, the marketing of events should include graduate student buildings like 50 Prescott and Gateway, and graduate students should be

included in the distribution of weekly newsletters. Student-run clubs and organizations should be better informed on how to involve graduate students in their events. Funding from the Student Government Association can only be used for undergraduate students, but the Graduate Student Government could provide funds for graduate students. Both domestic U.S. and international graduate students expressed a desire for more contact with the undergraduate community.

Mentorship and App for Connections

WPI could improve the International House's peer mentorship program to offer international students longer-term support. Starting connections before students arrive on campus could be beneficial, as this time is the most stressful and confusing for them. We could integrate this program with a web app that allows incoming international students to connect with U.S. students participating in IQP in their home countries.

Authorship

Section	Author(s)	Editor(s)
Abstract	Mahmoud Ahmed	Cierra O’Grady
Acknowledgements	Mahmoud Ahmed	Cierra O’Grady
Executive Summary	Mahmoud Ahmed, Aritro Deb Sarker	Cierra O’Grady
Chapter 1: Introduction	Cierra O’Grady	Mahmoud Ahmed, Aritro Deb Sarker
Chapter 2: Background and References	Cierra O’Grady, Aritro Deb Sarker	Aritro Deb Sarker, Cierra O’Grady
Chapter 3: Methodology	Fernanda Cálix, Mahmoud Ahmed	Fernanda Cálix
Chapter 4: Results and Analysis	Aritro Deb Sarker, Cierra O’Grady, Fernanda Cálix	Cierra O’Grady
Chapter 5: Conclusions and Recommendations	Fernanda Cálix, Cierra O’Grady	Fernanda Cálix

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Chapter 1: Introduction

The *Open Doors 2023 Report* demonstrated that the education of international students was "integral to universities and countries looking to support global innovation, collaboration, and peace" (Open Doors, 2023). The same report also stated that the U.S. was the top destination for international students, hosting 17% of all international students in 2023 (Project Atlas, 2023). In total, the United States housed 1,057,188 international students, which was an 11.5% increase from 2022, and notably, a 21.3% increase in international graduate students (Open Doors, 2023). Although the COVID-19 pandemic stifled travel, in the aftermath, the number of new international students in the U.S. far surpassed pre-pandemic numbers.

When adjusting to the country they are studying in, international students face many struggles. Generally speaking, international students have a higher chance of developing poor mental health than domestic students (Chen et al., 2020). One unique risk factor they face is distance from family and friends. In many cases, students' home countries are far from their host countries and difficult to travel to during breaks, leading to higher levels of loneliness (Alharbi & Smith, 2018). International students may also be unfamiliar with the U.S. in terms of social, cultural, legal, and educational customs, which can cause increased anxiety, as proven by studies that show international students do indeed deal with more anxiety than domestic U.S. students (Forbes-Mewett & Sawyer, 2016). Unfamiliarity with the U.S. may extend to the country's language, as many international students feel that they lack proficiency in English. Whether or not this is an accurate self-assessment, these students struggle with confidence and communication (Alharbi & Smith, 2018).

The mental health of international students has been of great concern to universities around the U.S., with colleges now focusing on ways to improve this matter. Worcester Polytechnic Institute (WPI), a STEM-focused university in Worcester, Massachusetts, shares this concern, as it hosts a significant number of international students. As of 2023, around 14.9% of WPI students were from other countries. A report from WPI on the school's mental health and well-being support stated that "Underrepresented members of the WPI community report a greater sense of disconnection and particular stresses on their mental health and well-being" (WPI Mental Health and Well-Being Task Force, 2022, p. 2). International students were included in the report's list of underrepresented students. Some grievances cited by these students were poor communication, a lack of safe spaces for cultural groups, discrimination, a lack of

connections between students and faculty, and food insecurity. The report further suggested that support for international students in their adjustment to the U.S. should be improved (WPI Mental Health and Well-Being Task Force, 2022). Indeed, many students feel that the resources and programs aimed at international students are lacking. Particularly for graduate students, there is little orientation or support for forming social groups. Furthermore, graduate students are on their own when it comes to finding housing, and international students in general struggle to receive scholarships and grants. Because of this, it is a challenge for these students to attain ideal living and learning conditions.

WPI's peer universities offer a number of ways to support international students. They, like WPI, have international student orientations (*Gateways International Student Orientation*, n.d.; *International Student Orientation*, n.d.; *International Student Orientation*, 2022; *International Student Orientation*, 2024; *New F-1 students*, n.d.; *Orientation*, n.d.; *Orientation*, n.d.-b). Some have workers specialized in international student care at the health center (*Meet the staff*, n.d.; *UHCS Staff*, 2024). Many organize cultural exchange programs, where students can practice English or share information about their own cultures with others (*About*, n.d.; *International Student Resources & Engagement*, n.d.; *Programs for International Students and Scholars*, n.d.; *Resources | International Student Services*, n.d.). Studies and papers point to social interaction as an important part of mental well-being; when international students form social connections, understand their host culture, and are supported against discrimination and xenophobia, they generally report being happier and healthier. It is especially important that international students connect not only with each other, but with domestic U.S. students, as research suggests a diverse support system is more beneficial (Bender et al., 2019). With this in mind, WPI's peer universities support their international students' mental health through orientation and cultural programs that encourage understanding and unity between international and domestic students.

Although we can identify factors that correlate to better mental health in international students, there is relatively little research in this area compared to domestic students' mental health, and researchers are not confident that their findings will directly improve the well-being of these students. For what research there is, the data often cannot be generalized because the sample only includes one ethnic group, or there is contradictory information (Alharbi & Smith, 2018; Nyunt et al., 2023). Additionally, there is a gap in knowledge about the effects of

cross-cultural communication on U.S. students. Based on the above research stating the need for social connections to improve mental health of international students, we investigated the best methods of fostering cross-cultural connections. We explored the best ways to create a program and application that would connect international students with U.S. students to form meaningful, long-lasting connections.

The goal of this project was to suggest a plan for WPI to improve international students' well-being—especially after cultural shock—and increase U.S. students' cross-cultural competence, allowing Americans to navigate relationships with their international counterparts with cultural sensitivity and awareness, resulting in the students feeling more connected to each other. The specific objectives related to this goal were as follows:

- Identify the top factors that affect the well-being of WPI's international student body.
- Compare the effectiveness of existing support systems for international students at WPI to other universities to identify the best practices and the areas for enhancement in the support of the international student community.
- Develop a plan to foster cross-cultural connections between international students and U.S. resident students at WPI, to support the well-being of the international student body while simultaneously creating opportunities for U.S. domestic students to create intercultural connections.

Our report begins with a literature review of existing research on international students and cross-cultural connections. We then discuss our project methodology, including its limitations and ethical concerns. Afterwards, we summarize our findings before finally detailing our recommended program for WPI students.

Chapter 2: Background and References

In 2023, the United States hosted a population of over one million international students (Open Doors, 2023). Despite this, many schools do not provide sufficient support for international students, causing their academic rigor and mental health to suffer (Forbes-Mewett & Sawyer, 2016). In this chapter, we first discuss the mental well-being of international students compared to domestic U.S. students. We then expanded on the issue by exploring factors that worsen international students' well-being. It was furthermore necessary to discuss the role played by the recent COVID-19 pandemic because it had significantly impacted international students' mental health, leading to increased levels of isolation, anxiety, and financial strain. Finally, we provided background information on Worcester Polytechnic Institute (WPI)—the setting of this project—and its international students.

Mental Health of International Students

Students' well-being has been shown to impact their academic performance (Forbes-Mewett & Sawyer, 2016), along with other areas of life. The well-being of students influences motivation, engagement, resilience, and cognitive functioning, all of which are important for academic performance. A student's academic and life achievements are ultimately shaped by their state of mental health and well-being, which lay the groundwork for successful learning and personal growth. Hence, we focused our research on the wellness of international students, particularly in the realm of mental health.

According to an article by Forbes-Mewett and Sawyer, rates of mental illness in American youth have been increasing more than any other age group since the early 2000s at the latest (2016). The most common time of onset for mental illness is between the ages of 12 and 25, and 26% of all people aged 16–24 suffer from depression, anxiety, or substance abuse. This is the highest rate out of any other age range. In addition, this report revealed an increase in suicidal ideation. In China and India, for example, suicide is one of the most common causes of death in youth; a paper by Patel et al. (2007) details a study performed on a rural community in India, where it was found that suicide represented around 25% of all deaths in boys and between 50–75% of deaths in girls ages 10–19. By studying the factors contributing to students' poor mental health, there is potential to develop strategies for their mitigation, thereby fostering improved mental well-being among young individuals.

International students struggle even more, having been reported to have higher anxiety levels than domestic U.S. students (Forbes-Mewett & Sawyer, 2016) and a higher rate of suicide attempts. International students experience more risk factors for suicide due to their separation from loved ones and difficulty fitting in. Columbia University reported that half of their students who committed suicide in 2016 were international students (Nyunt et al., 2023). Furthermore, African students have been found to be especially stressed—more so than other students of color (Alharbi & Smith, 2018). Alharbi and Smith’s literature review does not provide further insight into why this might be the case, but it does add that younger students and females are more stressed than other demographics.

Although international students face more mental stress than domestic students, they are also more likely to avoid seeking mental health care (Chen et al., 2020). For instance, in a study of Australian university students, 65% of international students reported a willingness to seek counseling, compared to 75% of domestic students saying the same (LaMontagne et al., 2023). This is often due to stigma, taboos, and a difference in cultural norms compared to the U.S. (Forbes-Mewett & Sawyer, 2016). In many places, there is a belief that counseling is for mentally ill people, and mental illness has a negative connotation, associated with instability and inadequacy. Additionally, a book written by Nyunt et al. (2023) states that mental health stereotypes—even in the United States—assume high-achieving graduate students, particularly international ones, do not need support. This act of putting off professional help can increase the severity of mental health problems, and even result in suicidal ideation. These students then need greater and longer-term help. However, when confronted with these challenges, mental health support from universities may be limited, lacking long-term care options and featuring extended waiting lists for referrals (Forbes-Mewett & Sawyer, 2016).

Sources of Stress for International Students

International students face a number of different types and sources of stress, all of which affect their mental health. These include stress related to facing a new environment, social stress, language and academic stress, and financial stress. As of 2016, around 80% of issues experienced by international students are emotional or social issues, while the remaining 20% are education-related (Forbes-Mewett & Sawyer, 2016). Regardless of frequency, each of these stressors can negatively impact one’s well-being and the transition to a new country.

To begin with, one source of stress for international students is acculturative stress, which is related to adjusting to and assimilating into a new environment. Forbes-Mewett and Sawyer's study suggested that living away from home in a foreign country causes stress, and the experience is often described as "culture shock" (2016). When living in a new country, people may experience homesickness, discrimination, perceived hate, and fear, all of which contribute to acculturative stress. However, factors such as English proficiency, social connectedness, and country of origin impact how well one is able to adjust (Alharbi & Smith, 2018). Acculturative stress can influence other factors of students' health, such as depressive symptoms (Nyunt et al., 2023). Notably, the "frightening" nature of a new environment may make international students hesitant to seek health care (Forbes-Mewett & Sawyer, 2016).

What can also be frightening is the newfound freedom many international students find themselves with. Some international students come from a restrictive background and home life, and thus end up finding it challenging to take care of themselves. Being thrown into a new situation where one has to provide for oneself for the first time can be straining. According to Forbes-Mewett and Sawyer, "cooking, budgeting, and organizing accommodation posed difficulties" for international students (2016). These students experience anxiety and uncertainty in other ways as well. They can be uncertain of their future—for example, whether they want to stay in the U.S. after college or return home. There is also an unfamiliarity with U.S. cultural norms and things like academic systems and legal responsibilities. Political policies, such as immigration laws, can also lead to uncertainty (Nyunt et al., 2023).

English-language proficiency is a significant concern and source of stress for many international students. A lack of familiarity with the official language of the country one resides in can cause difficulty with understanding lectures, exams, and assignment instructions. Public speaking and class presentations cause immense anxiety in international students (Alharbi & Smith, 2018). Research indicates that students who lack fluency in English face difficulties in academic performance (Forbes-Mewett & Sawyer, 2016). Furthermore, English proficiency affects how well one can socialize with others and form connections. Making friends or even seeking help on assignments or personal struggles can be difficult for international students. Even if a student is proficient enough in English to effectively communicate with native speakers, a lack of confidence may cause them to hold back from opportunities to interact with others. As with acculturative stress, English language difficulties make it tough to receive

appropriate health care; this is mainly because of misunderstandings between professionals and patients (Forbes-Mewett & Sawyer, 2016) and perceived discrimination due to language abilities (Ma et al., 2021). That being stated, the English communication involved in communicating with a healthcare professional can become great practice for international students, enriching their experience abroad and making their adjustment easier (Alharbi & Smith, 2018).

As mentioned, difficulties with English can cause students to struggle in class. However, there is another reason that international students might experience academic stress: unfamiliar teaching methods (Forbes-Mewett & Sawyer, 2016). Oftentimes, international students find that the teaching methodology of U.S. professors and classes varies significantly from their learning style back home (Alharbi & Smith, 2018). For example, the school system in the U.S. is less formal than in other countries. International students are likely to lack experience in open classroom discussions where students are encouraged to speak out. This may hinder their class participation, which is an expectation in many U.S. courses (Nyunt et al., 2023). International students may have a hard time adjusting to this new system of education. They may fall behind, even if they had previously been a top student in their home country, impacting their self-esteem.

Discrimination is a considerable barrier for anyone coming into the United States. According to a study done by Chavajay and Skowronek, 48% of international students are victims of discrimination (Alharbi & Smith, 2018). There has been an increase in white nationalism and hate crimes in the United States, and international students report that they are afraid of ethnically-motivated violence (Nyunt et al., 2023). There are also more subtle forms of bigotry, such as microaggressions, which are perhaps more common. Nyunt et al. (2023) describe how the specific forms of racism and marginalization can depend on the ethnic group. Middle Eastern students deal with stereotypes and judgments about their presumed religious beliefs, with much of the prejudice they face having been exacerbated by the 9/11 attacks. South Asian students, too, felt the effects of 9/11, often being mistaken for Middle Easterners. In a country with a history of racism against people with non-white appearance, Black students may face the most racism, as implied by the higher proportion of these students experiencing stress compared to other racial or ethnic groups. The intersection of race and immigration status results in a higher level of discrimination. The level of education may also make an impact, as graduate students, who work on research projects, may be “treated as ‘cheap labor’” (Nyunt et. al, 2023, p. 90) by domestic U.S. students, sometimes being made to do unpaid work. One cause of

discrimination is ethnocentrism, which involves using one's own culture as a frame of reference to judge other cultures (Neuliep, 2012). Ethnocentrism plays a role in how domestic students, especially those who are white, interact with people from other backgrounds. This type of mindset causes people to view other cultural norms as strange or even wrong in comparison to their own. Combined with stereotypes and bigoted rhetoric about other cultures, ethnocentric attitudes can manifest into discrimination that diminishes international students' mental health and sense of social belonging, making them feel unsafe or unwelcome. Discrimination makes it even more challenging for international students to open up and form connections. This is damaging to international students' health given that social connection is one of the only factors research has shown to improve international students' well-being.

Loneliness is another form of stress that international students face, and it is caused by being far away from family and friends (Alharbi & Smith, 2018). Distance and differences in time zones can make communication with loved ones difficult. For most people, staying in a place that is distant from one's loved ones is an isolating experience. Furthermore, unfamiliarity with cultural norms, food, or urban environments can cause what Nyunt et al.'s (2023) book describes as "cultural loneliness". For some, this unfamiliarity is willful, as students who come from cultures that value tradition may refrain from assimilating into U.S. culture, which can make it difficult to form social connections—though it comes with the benefit of maintaining one's cultural identity. Nyunt et al. also suggest that graduate students, who often partake in independent research and struggle to form a peer social group early on, may feel particularly isolated. This is all compounded by the previously discussed social difficulties that confront international students. According to the Interpersonal Theory of Suicide, a lack of belongingness is a key indicator of suicidal thoughts (Nyunt et al., 2023), making this issue a pertinent one to address.

Financial pressure is a common issue faced by international students. In many cases, international students undergo financial strain, causing them to work long hours. They may become burnt out or lose sleep (Forbes-Mewett & Sawyer, 2016). However, according to Fischer, more and more undergraduate students are receiving financial support from their families (2023), so this may be becoming less of a problem.

A specific cultural difficulty is "face concerns," often experienced by Chinese students. As described by Ma et al. (2021), "face concern [is] one's desire for a positive social image" and

is “related to one’s respectability, social positions, and others’ expectations placed upon them.” Considering the social and educational difficulties and shame experienced by international students in the U.S., distress regarding face concerns is likely exacerbated for these students. Additionally, East Asians tend to be perceived as a "model minority," which creates added pressure for them to live up to this image. If they feel that they do not meet the expectations of others—or that they are disgracing their family image—they may feel like a burden to their parents, family, and society, which is another major risk factor for suicide (Nyunt et al., 2023).

Finally, through all of these stressors, international students often find themselves with a lack of university support. Chen et al. (2020) provided the example that, during school breaks, numerous institutions do not offer housing. It can be difficult for international students to return home during these breaks, especially if their home country is far away, so they may end up without a place to live for weeks or months at a time. In addition to this, there are the previously mentioned limitations of school counseling services.

COVID-19’s Impact on Students’ Well-being

With the rise of the COVID-19 pandemic, a number of countries went into quarantine, including the United States. This isolation had a sweeping impact on everyone, with denizens of the U.S. feeling new levels of loneliness and disconnectedness. People were prohibited from seeing their friends and loved ones, and connections were difficult to form and maintain. Anecdotes arose of people falling into depression and despair, not knowing what to do with themselves or how to feel less alone. Some even reported a degradation of children’s social skills and development during the quarantine. This is no surprise, as social connection is a well-known factor in psychological well-being and growth, and even weak social connections are linked to greater happiness (Sandstrom & Dunn, 2014).

COVID-19 saw a rise in mental unrest for everyone, but racial minorities in the U.S., especially East Asians, experienced a surge in discrimination: “[A] surge of microaggression or even blatant discrimination has been rising toward international students, especially those of Asian origins.” (Chen et al., 2020) As previously discussed, discrimination is a major contributing factor in weakening the mental health of international students. Conclusively, the COVID-19 pandemic had disastrous effects on students’ well-being—especially international

students. For this reason, it has become increasingly important to prioritize the health and wellness of students.

Supporting International Students

Unfortunately, there is currently little information on how to support international students' wellness. Most current research suggests assimilation improves wellness, but this conflicts with other evidence that a loss of cultural identity can impede well-being (Alharbi & Smith, 2018) and that recognition of one's culture is important for mental health (Nyunt et al., 2023). It had also been observed that social support, especially subjective feelings of it, improves international students' psychological adjustment (Bender et al., 2019). Here, subjective social support is defined as "perceived comfort, caring, esteem, or help an individual has from other people or groups." This can be achieved through extracurricular activities and building friendships (Alharbi & Smith, 2018). Not all social support has the same effect, however; support from a diverse range of people has a greater positive effect than just support from other international students (Bender et al., 2019), and quality of relationships is more important than quantity (Alharbi & Smith, 2018). When social connections are not diverse, friendships within one's own cultural group are better than connections with domestic students and organizations. Nyunt et al. (2023) suggest that the most important factor in international students' well-being is sociocultural support, followed by academic support and practical assistance.

International Students at Worcester Polytechnic Institute

Worcester Polytechnic Institute (WPI) is a STEM university boasting a project-based curriculum with numerous global project opportunities. Students have the opportunity to study abroad, and each receives a scholarship for this purpose. WPI also welcomes students from around the world. As of 2024, 1,098 international students are enrolled at WPI, making up 14.9% of the student body. Of these students, 367 are new—the highest number of new international students WPI has had in the last three years (WPI University Analytics, 2023). To provide the best learning experience possible, it is crucial that WPI provide resources to assist in these students' transition to the United States, as well as ensuring their wellness needs are met.

However, WPI has struggled with nurturing students' mental health. During the pandemic, but when quarantine regulations were being relaxed, students of WPI were allowed

back on campus. At this time, WPI experienced a mental health crisis. Five students committed suicide within the span of six months (Kisner, 2024). A task force was formed with the goal of collecting information on why this was happening and how it could be stopped. Results from a survey were analyzed, and two of the most common reported reasons for mental distress were “lack of social connection” and “pandemic burnout” (Kisner, 2024). It was also noted that special focus should be given to students in minority demographics. In the wake of this issue, it is imperative that WPI administration put in place resources and systems to support their students’ well-being—especially for those who are most at risk.

In summary, each year international students come to the U.S. just to find that they are not effectively supported, to the detriment of their well-being. With the unique pressures and struggles faced by international students—including unfamiliarity with the U.S., loneliness, and discrimination—their wellness is at higher risk compared to domestic students. The existing climate at WPI and lack of certainty about how to improve these students’ well-being inspired us to research cross-cultural connections, hoping to give international students the opportunity to form long-lasting support systems.

Friendship Between U.S. Domestic Students and International Students

As educational institutions continue to welcome a diverse student body, they have begun to realize the importance of interactions between domestic and international students and place emphasis on making sure their campuses are inclusive. These friendships are pivotal experiences that enhance educational outcomes and which are vital for students’ well-being. However, fostering these intercultural friendships comes with a set of challenges and requires concerted efforts from both students and institutions.

One of the primary challenges in forming friendships between U.S. and international students stems from cultural differences and language barriers. These obstacles often prevent deep and meaningful interactions, leading to social apprehensions and superficial relationships. Research by Rose-Redwood and Rose-Redwood (2018) highlights that having a diverse population on campus does not guarantee intercultural contact. Moreover, Williams and Johnson (2011) have noted that prejudice and a history of problematic intercultural relations can further exacerbate the difficulty in establishing friendships. These challenges reveal the complexity of

intercultural interaction, which requires more than just the mere presence of diverse student populations to meaningfully occur.

To promote cross-cultural interactions, universities can implement formal and informal strategies designed to facilitate these relationships. Formal programs such as conversation partners and mentorship programs where domestic and international students are paired can help bridge the cultural divide. Informal social interactions, such as campus events and clubs that encourage a mix of domestic and international student participation, also play a crucial role. Rose-Redwood and Rose-Redwood (2018) discuss how both types of initiatives require active commitment from all students to be successful.

The impact of intercultural friendships extends beyond individual benefits to encompass academic and personal growth. Hendrickson, Rosen, and Aune (2011) illustrate that international students with more host country friends experience less homesickness and greater contentment, enhancing their overall academic experience. These friendships also provide domestic students with a broader cultural perspective, increasing their intercultural competence and preparing them for a globalized world.

Institutions play a pivotal role in creating environments that support and facilitate intercultural friendships. By supporting initiatives that promote shared experiences and interactions, universities can significantly improve the interactions between U.S. and international students. Arkoudis et al. (2013) suggest that curriculum design and social programming that integrate diverse student groups are effective at promoting these interactions. Such institutional efforts support international students in adjusting to a new culture and foster a more inclusive campus environment, which is essential for the development of meaningful intercultural relationships.

Chapter 3: Methodology

Goal Statement and Objectives

The goal of this project is to identify the major factors negatively affecting the well-being of international students at WPI and to explore the use of personal intercultural connections as a way to address some of these issues. As part of our project, we aim to assist WPI faculty and staff in developing an effective plan and management process to enhance cross-cultural communication and connection at the school. In designing such a program, there may be an added bonus for U.S. domestic students that make these connections with international students; there is research that shows that these interactions improve all participants' intercultural competence (Luo & Jamieson-Drake, 2013).

To achieve these goals, we developed three project objectives:

1. Identify the top factors that affect the well-being of WPI's international student body.
2. Compare the effectiveness of existing support systems for international students at WPI to the resources available at other universities to identify the best practices and the areas for enhancement in the support of the international student community.
3. Develop a plan to foster cross-cultural connections between international students and U.S. resident students at WPI to support the well-being of the international student body while simultaneously creating opportunities for U.S. domestic students to create intercultural connections.

To accomplish these objectives, we used multiple research methods. Our main methods were surveys, focus groups and interviews. Additionally, we conducted research using both quantitative and qualitative data. In this section, we discuss the reasoning behind selecting said methods, how said methods are used to achieve the aforementioned objectives, and the limitations associated with each method.

Objective 1: Identify the top factors that affect the well-being of WPI's international student body.

1.1 Survey

To gather quantitative data on international students' well-being, we designed and administered an online survey. Surveys as a research method are a good tool for studying cause and effect relationships, which, according to Bell (2010), makes this method ideal for fact-finding and for comparison. We aimed to gather both qualitative and quantitative data, which surveys allow (Ponto, 2015) by facilitating the exploration of human and social behavior and the collection of numerical, objective data. One of the particular aspects of our projects is that we aimed to represent international students as more than just numbers and issues to be solved on college campuses. To ensure we met this aspect, the survey included questions addressing various aspects such as stress levels, feelings of loneliness or isolation, access to resources, coping mechanisms, and overall satisfaction with the support systems at WPI. The survey was distributed to all international students enrolled at WPI, ensuring a representative sample. A copy of the survey is available in Appendix A. We used the platform Qualtrics to administer the survey because it is cost-effective, it allows for a large array of question types, and most importantly, because its variety of settings allows for the protection of the anonymity of the user. To ensure participation that would lead to truly representative results, we partnered with the Center for Well-Being for the distribution of our survey. As an incentive for people to participate in our survey, we gave users the option to opt into entering a raffle for a \$25 Amazon gift card. To analyze the data gathered from the surveys, we used Google sheets to make plots and graphs that also allowed us to study trends in responses.

1.2 Student Interviews and Focus Groups

To complement the quantitative data obtained through the survey, we conducted semi-structured interviews and focus groups with a subset of international students and U.S. domestic students. Interviews allow for the collection of experience-focused data (Bell, 2010), allowing us to see students as significant components of the community and resources for the solution. These interviews provided an opportunity for in-depth exploration of individual experiences, challenges, and perceptions related to mental health and well-being. Interviewees self-selected into the process; the users taking the survey had the option to express interest in the interview and focus group process. To maintain confidentiality, the team created two surveys: the

first one had the survey questions in Appendix A, and the second one, which was accessed through the first one, asked if respondents were interested in participating in the interviews and focus groups, as well as the raffle of a \$25 Amazon gift card. The one-on-one student interviews were conducted via Zoom, while the focus groups were run in-person.

About 80 individuals expressed interest in participating in our focus groups, which were completed with a total of five focus groups and one individual Zoom interview. We prepared to conduct the focus groups by using the resources provided by our sponsor, including the University of Mississippi's Guide to conducting focus groups (Eliot & Associates, 2005). We formulated the questions that we would be using during the groups, which can be found in Appendix B. Since the survey responses were anonymous but because we wanted to give students the opportunity to elaborate more on some topics, we used some of the international student survey questions during our focus groups. After formulating our questions, we also wrote the preamble consent form. We submitted the materials to the IRB and waited for approval. Once we received the approval, we designed another survey on the platform Qualtrics to let interested students choose the time slots for which they were available. Each focus group had between 2 and 5 participants. Once we booked a space on campus to host the focus groups, we sent out emails to the different students confirming the time, date, and location where their focus group would be taking place. We had two moderators per focus group. We offered light snacks and refreshments for the participants, which both moderators invited students to eat once the participants arrived. At the start of each focus group, the preamble consent form was read by moderator 1, and all the participants signed their respective form. To protect the anonymity of the participants, each student was assigned a number, which is what they were referred to in the notes taken by moderator 2. Moderator 1 led the discussion by asking questions and eliciting answers, while moderator 2 watched the time, took notes, and recorded the discussion. The interviews and focus groups were audio-recorded (with consent from the interviewee) and transcribed for analysis. The focus groups lasted between 30 and 45 minutes, depending on how large the group was and the depth of the discussion amongst participants. Focus groups can prove beneficial for gathering subjective, qualitative data, for they allow more in-depth discussions and information on perceptions and insight, and they allow for people to react to other participant's responses. (CDC, 2018). As mentioned, we also gave students the option to do one-on-one Zoom interviews. The same questions as the focus groups were used for these

interviews (see Appendix B). We only had one moderator for the interviews conducted via Zoom. The interviews ran similarly to the focus groups, starting off by reading a consent preamble form and with the moderator asking questions, taking notes, and recording the interview. A big part of the human experience is lost in translation when the interaction is limited to answering multiple choice questions and scales. Once the interviews and focus groups had all taken place, we transcribed the audio recordings to code and categorize responses, identifying patterns and trends.

Objective 2: Compare the effectiveness of existing support systems for international students at WPI to the resources available at other universities to identify the best practices and the areas for enhancement in the support of the international student community.

2.1 Survey

Within the survey described in section 1.1, we included questions addressing the existing resources for international students at WPI. These questions probed the degree of familiarity that students have with these resources, while also addressing the level of comfort students have with using said resources. The questions sought to gather feedback on the accessibility, adequacy, and usefulness of the different support services at WPI, such as counseling services, academic support, cultural integration programs, and community resources. These questions are available in Appendix A.

2.2 Faculty and Staff Interviews

In addition to the survey, we conducted interviews with key stakeholders involved in providing support to international students at WPI. This included representatives from counseling services, international student advisors, faculty members, and administrators responsible for student affairs. We brainstormed what questions we could ask for these interviews and created a written outline by using ChatGPT, keeping in mind that the conversations are all structured in such a way that something concrete may be coming out of these interviews. The interviews explored their perspectives on the strengths and weaknesses of

existing support systems, challenges faced in meeting the needs of international students, and suggestions for improvement. The interview questions are available in Appendix C.

We also planned on conducting interviews with faculty and staff at peer institutions. We selected staff from other institutions after completing the research described in section 2.3 of this chapter. The interviews with peer institutions were to be conducted to allow for qualitative comparative research as well. The questions used for these interviews are different from the ones used for WPI interviewees. These questions sought to inquire more about the unique support systems and resources available at each respective school and the feedback that has been received (see Appendix C).

2.3 Comparative Research Analysis

To contextualize our findings, we conducted a comparative analysis of support systems for international students at WPI with those offered by peer institutions. A comparative analysis is a side-by-side comparison that pinpoints similarities and differences between two or more things. This method seeks to define boundaries between the different units being compared (Esser, 2017). This involved reviewing published reports, websites, and official data on support services provided by universities. By comparing WPI's support systems with those of other institutions, we aimed to identify best practices and areas for enhancement. To ensure we submitted the schools to unbiased and horizontal comparison and judgment, we first drafted a series of questions to help the team narrow down the criteria being used when evaluating the different institutions. These questions can be found in Appendix D.

Objective 3: Develop a plan to foster cross-cultural connections between international students and U.S. resident students at WPI, to support the well-being of the international student body while simultaneously creating opportunities for U.S. domestic students to create intercultural connections.

Having researched and studied the existing programs and resources at WPI, having compared them to existing programs at other schools, and having interviewed and surveyed students, faculty, and staff at WPI and fellow universities, the team planned for execution at WPI, with the upcoming 2024 Fall semester as the potential season to try to execute some of the

recommendations made . The plan outlines specific problems identified during the data analysis and specific strategies to target them. Using the results from the surveys and interviews, and the findings from the comparative research with other schools, we highlighted the areas of enhancement in WPI's support network for international students and support of intercultural competency, while also finding ways to implement strategies that have worked at other schools.

Another part of our deliverable consisted in providing the sponsor with a database schema for a web app that would be an independent yet complementary part of the cross-cultural connections program. The goal of the web app is to pair up incoming and first-year international students with domestic U.S. students interested in forming intercultural connections. A database schema is the logical and visual configuration that the database hosting the app would require. After the database schema was completed, we made sketches of the potential interface of the web app. Another essential part of developing the web app was researching the best languages and frameworks to use. By providing the database schema, we provide an outline for future development of the web app.

Data Analysis

We used different tools and methods to lead the quantitative and qualitative analyses of the data gathered. The data collected from the surveys is what we refer to as our quantitative data. The analysis of the quantitative data was mostly done by conducting statistical significance and confidence interval tests. To illustrate our data in a way that was easier to understand, we created pie charts for the multiple choice and checkbox questions. We chose pie charts because they allow us to study the answer distribution by comparing parts of something portrayed as a whole (Centers for Disease Control and Prevention, 2018). We used histograms to compare the responses we got from undergraduate students versus graduate students as well as to study the differences in answers between individual class years. Histograms are used to display the frequency or proportion of continuous data divided into specific categories (Russell et al., 2021). For the Likert scale questions, we performed Welch Two Sample t-tests to study if there were significant differences in the answers between international and domestic U.S. students, as well as between undergraduate and graduate students. The Welch t-tests are used to compare the means of two independent populations whose variances are not equal (West, 2021).

The data gathered through interviews and focus groups is what we consider the qualitative data in our project. To analyze the qualitative data, we used the method of coding. Coding is a strategy for analyzing qualitative data where one word or short-phrase descriptive labels are used to identify repeating patterns or trends in the data (Saldaña, 2016). Before we even started the coding portion of the analysis, we created a document where we included all the responses from the focus group questions under the respective questions. This made it easier to start coding by looking for patterns in the responses to the questions asked during the focus group. We then created a Google Sheet where we wrote all the short phrases and words that were repeated throughout the discussions, these are our codes. Once we had identified all the codes, we divided them into categories or greater themes. One of the advantages of using this analytical method is that coding allows researchers to get to know their data well (Waters et al., 2021). Thematically coding the data allowed us as researchers to spend enough time developing concepts and making meaningful links between the numerous and varied results we obtained from focus groups and interviews.

Limitations

To ensure that the team carried out a worthwhile investigation that is detailed, accurate, and truly representative of the populations in question, we used different research methods; however, no research method is flawless.

For our surveys, the first limitation was that this project took place in the second semester, when many students have already completed three terms at WPI and their recollection of the culture shock and transition difficulties were not as recent. One big risk with surveys is diction, because the same words could have different meanings to different people. For this reason, the team and sponsor carefully formulated the questions to avoid misunderstanding from the recipients. Another challenge we faced was managing and guaranteeing a good response volume. A low response volume decreases the validity and true representation of our survey results. To encourage participation, we offered gift cards as raffle prizes for students, which, paired with the fact that the Center for Well-being distributed our survey, made our response volume exponentially larger than expected. This proved to be a limitation because, in wanting to make the survey quicker and more attractive to the user, we also made it easier for people to

submit responses just for the sake of participating in the raffle (e.g. not making any questions required led to some people skipping questions, except the one to opt into the raffle).. Once the survey had been administered and no more responses were being allowed, we started analyzing the data, a stage during which we realized our diction for one of our questions made the responses hard to analyze, because the question was too open-ended and left up to interpretation. This question was better fit for interviews and focus groups (the question is #2 on Appendix A).

There were also limitations to doing interviews and focus groups as methods of research. The duration of our project prevented us from interviewing as many individuals as we wish. Given the amount of responses we got, it was hard finding enough time to lead as many focus groups as we desired. As we led the focus groups, we also found the limitation that oftentimes, our questions were only applicable to international students, so U.S. domestic students had a hard time joining the conversation and relating to their international peers. The other challenge was the difficulty in scheduling interviews with staff from peer institutions, for we found staff to be unresponsive or too busy to work with us. Unfortunately, only one peer institution replied in time to interview them, making the comparative analysis harder to complete to the desired level of depth. For future projects, staff from institutions, both peer ones and WPI, should be reached out to earlier in the project (i.e. C term, for the WPI calendar).

Ethical Considerations

We are cautious of ethical considerations in our study. We did not collect any identifying information of students who took part in our survey, and the students were kept anonymous because we want to protect the privacy of our participants. Additionally, anonymity led to participants sharing information that they would otherwise keep to themselves were their identities recorded. To ensure that their identities remain protected, we only refer to focus group and interview participants using numbers. Each participant in the survey or interview was given a consent preamble to be aware of the intention of the study and their right to privacy. All the participant's information will be protected and remain confidential.

As a team, we understand that the topic of well-being is sensitive. Keeping the individual well-being of interviewees our priority, interviewees were able to choose to opt out of answering certain questions or withdraw from the focus group discussion and interview process at any point.

Chapter 4: Results and Analysis

We analyzed the data from our survey, focus groups, and interviews in order to determine the best ways to improve international students' well-being and facilitate cross-cultural connections. Our survey, which gained 671 student responses, asked a separate set of questions for U.S. and international students. Domestic U.S. students were asked about their intercultural experiences and the ease with which they interact with students from other backgrounds. International students were asked about their subjective feelings of belongingness and inclusion, friendship dynamics in the U.S. and at WPI, and cultural adjustment. For multiple-choice, checkbox, and Likert scale questions, we created pie charts and histograms to visualize the distributions of selected answers. Note that no questions in the survey were required, so the plots shown may not represent all 671 respondents. Where relevant, we performed a Welch Two Sample t-test to test if there was a significance in the differences between answers of international and domestic U.S. students or across class years.

In our focus groups and interviews, we gained a lot of valuable insights into the ways in which our participants form cross-cultural connections, as well as the best practices for improving student well-being and intercultural competence. We conducted five focus group sessions and one personal student interview, reaching 10 students in total. For our interviews with peer institutions, we interviewed a representative from Holy Cross's Office of International Students, Dr. Marissa Lombardi from the Forum on Education Abroad. Though we were unable to interview as many peer institutions as we originally planned, our conversations gave us greater insights into the importance of equipping students with the right tools to make meanings out of the cultural differences they experience. It is hard to determine what the best practices are, given different institutions have different international student bodies; however, we learned from our interviews that the pre-departure period and the first semester on campus are the most essential periods where the foundations for the support that international students receive is most greatly felt by the students. For our interviews with WPI staff, we interviewed the staff at the Global Experience Office, Kathleen Head, Kiara Ortiz, and Candace Ruta-Burdette. We additionally interviewed one faculty member at WPI, Assistant Professor in Learning Science & Technology and Psychological and Cognitive Science Stacy Shaw, to learn from her expertise in student well-being and experiences working with students at WPI. We have coded the responses we received from our focus groups and interviews, creating nine distinct categories: campus

resources, lifestyle, friendship, opportunities for intercultural meetings, culture shock and adjustment, cultural differences, intercultural competence, support networks, and our suggested application.

Recurring themes in our data were the lack of organic ways to meet students from other cultural backgrounds, a desire for more on-campus events, and the importance of communicating to international and graduate students.

Intercultural Competence

In our survey, U.S. students were asked about their satisfaction with the cultural exchanges they have experienced at WPI, the importance they place on intercultural communication skills and competence, and how high they believe their intercultural competence to be.

As shown in Figure 1, most U.S. respondents (48%) reported feeling neutral about the opportunities for cross-cultural exchange at WPI. Out of the students who did have an opinion, 47% indicated that they feel satisfied or very satisfied with their cultural exchanges. However, 59% of U.S. students revealed a desire to have more cross-cultural encounters (see Figure 2). Discussion from our focus groups may explain this discrepancy; some students stated that they do not go out of their way to meet international students, nor is it something they think about often, but they do recognize the benefits of having diverse interactions.

Of note is that there is no statistically significant difference in interest in forming cross-cultural connections $t(99.81) = .78, p = .433$ between domestic and international students, which contrasts our prior assumption that U.S. students would need an incentive to participate in a cross-cultural exchange program.

U.S. Student Satisfaction With WPI's Cultural Exchange Opportunities (n = 564)

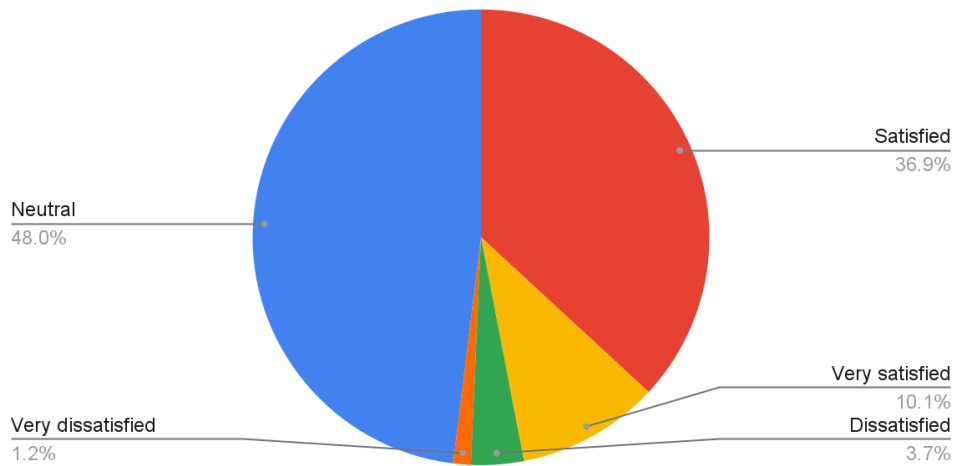


Figure 1: Domestic U.S. student responses regarding their satisfaction with their cultural exchange experiences at WPI.

Do U.S. Students Wish They Had More Cross-Cultural Encounters? (n = 581)

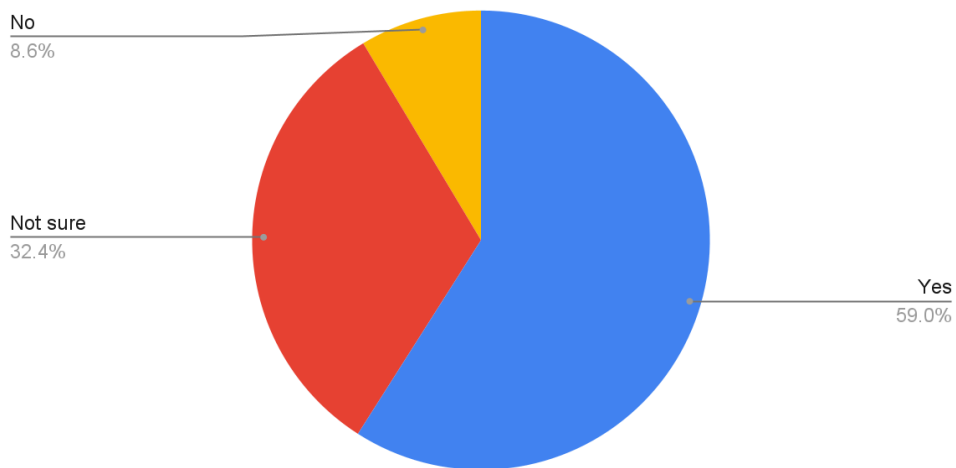


Figure 2: Domestic U.S. student responses regarding their desire for more cross-cultural encounters at WPI.

Figures 3 and 4 depict U.S. survey participants' attitudes towards intercultural exchange. The vast majority recognized the importance of intercultural communication skills as well as

intercultural competency (89% and 92.7% respectively). This supports the notion that U.S. students understand the value of cultural exchange. Furthermore, these statistics, along with the fact that a sizable portion of our U.S. participants desired more intercultural interactions, affirms our goal of improving U.S. students' intercultural competency and creating more opportunities for cross-cultural connections.

Importance of Intercultural Communication Skills According to U.S. Students at WPI (n = 583)

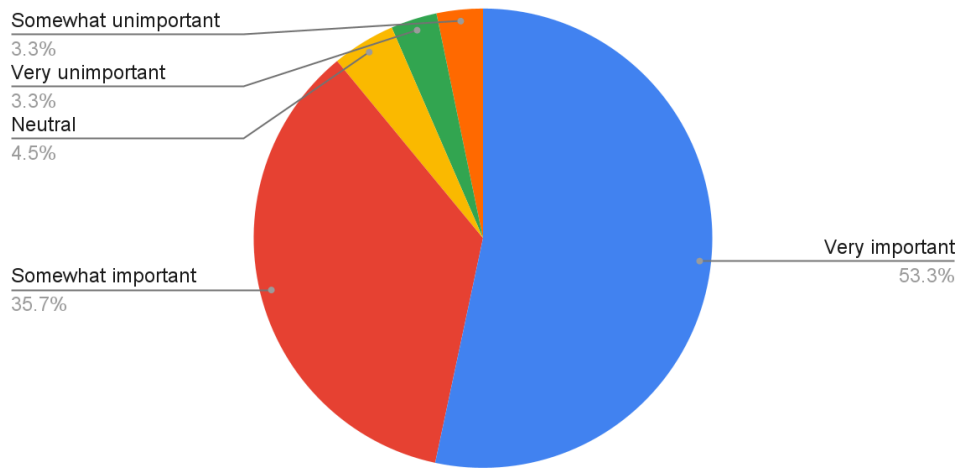


Figure 3: Domestic U.S. student attitudes on the importance of intercultural communication skills.

Importance of Intercultural Competency According to U.S. Students at WPI (n = 586)

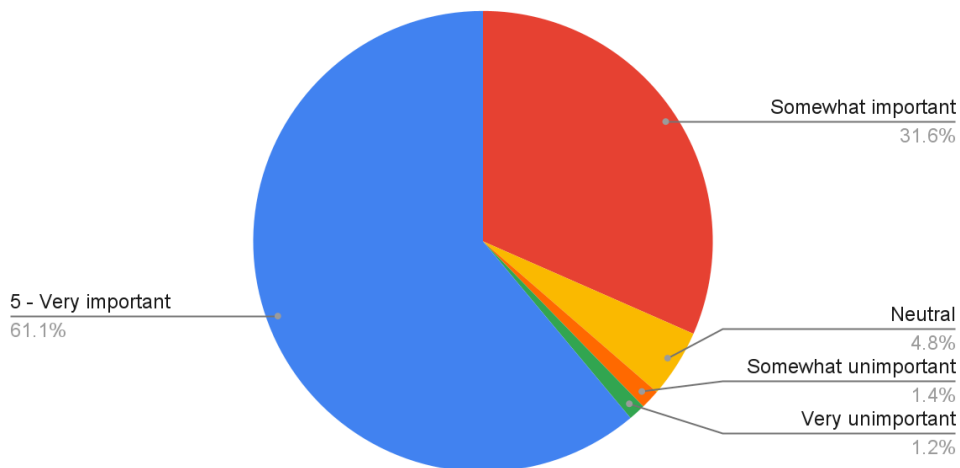


Figure 4: Domestic U.S. student attitudes on the importance of intercultural competency.

WPI's domestic U.S. students recognize the importance of intercultural understanding, but do they have the relevant skills for acquiring competency in this area? According to Figure 5, yes; a striking 70.1% of our American survey participants rated themselves as having high or very high intercultural competence.

U.S. Students' Self-Rankings of Intercultural Competence
(n = 586)

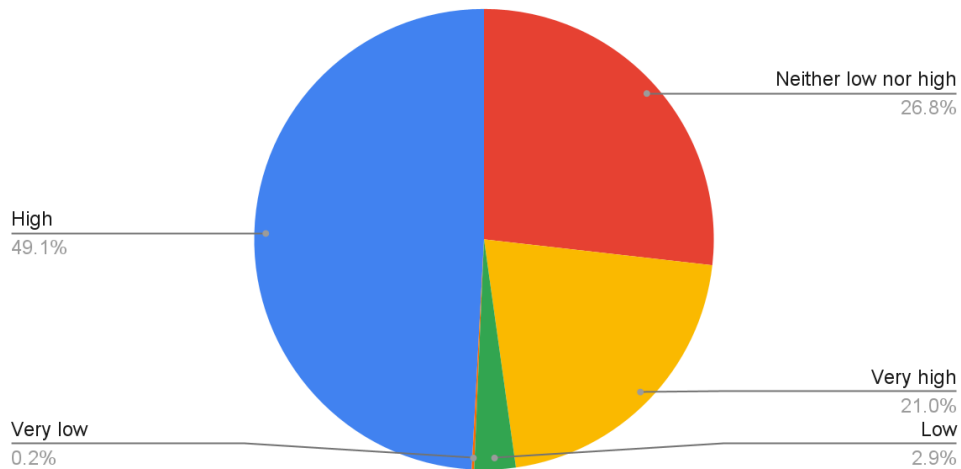


Figure 5: Domestic U.S. students' rankings of their own intercultural competence.

However, is this backed up by the opinions of international students, and is there more nuance to the issue? From our focus group data, as shown in Table 1, the consensus seems to be that U.S. students at WPI are somewhat, but not entirely, intercultural competent. No international students in our focus groups felt that U.S. students entirely understand them—only somewhat or not at all. This suggests that there is room for improvement in Americans' intercultural competence, but that they are at a good starting place. The U.S. students themselves generally feel ready to work with people from different backgrounds, while still anticipating that they will experience culture shock if they go abroad.

Students' levels of intercultural competency will heavily affect their experience with the Interactive Qualifying Project (IQP), a major third-year project at WPI, if they choose to go abroad. Understandably, the representatives we interviewed from the Global School suggested that students should start preparing for their IQPs as soon as possible after receiving their

placements. When looking into ways to improve U.S. students' intercultural competency, it may be best to include preparations for IQP.

Table 1: Codes Relating to Intercultural Competence

Code	Number of Participants who Mentioned It
U.S. students are somewhat intercultural competent but don't understand certain things, or can socialize well with people from other cultures but not necessarily work well with them	4/12 (33.3%)
American students somewhat understand international students	3/12 (25%)
U.S. students feel ready to work with people from different cultural backgrounds	3/12 (25%)
American students don't understand international students	2/12 (16.7%)
U.S. students at WPI are intercultural competent	2/12 (16.7%)
U.S. students are not intercultural competent	2/12 (16.7%)
I have above average intercultural competency compared to other WPI students	2/12 (16.7%)
I, as an American, have low intercultural competency	1/12 (8.3%)
U.S. domestic students must be prepared for the globalized workforce	1/12 (8.3%)
Students going abroad for IQP should start preparing as soon as they get their placement	1/12 (8.3%)

International Students' Sense of Belonging and Inclusion

With background on the intercultural experiences of our U.S. participants, we delve into the international respondents' feelings regarding fitting in on campus. When asked about the importance of having close friendships in feeling a sense of belonging and inclusion in a

community (see Figure 6), a sweeping 81.9% of international survey-takers indicated that it is important. A slightly smaller proportion (66.2%), according to Figure 7, agree that they feel like they belong in the WPI community. While this is a large positive response, it is clear that there is still room for improvement in terms of helping international students feel a sense of belonging. Figure 8 shows the reported obstacles to achieving this. The most common were cultural barriers and a lack of people that participants feel comfortable with.

Compared to the previous statistic, the responses about feelings of isolation were more mixed (see Figure 9). A sizable 42.6% of international participants reported rarely or very rarely feeling lonely and disconnected on campus, while 29.3% feel this way often or very often. The remaining 28 percent seem unsure, having responded that they neither rarely nor often experience these feelings.

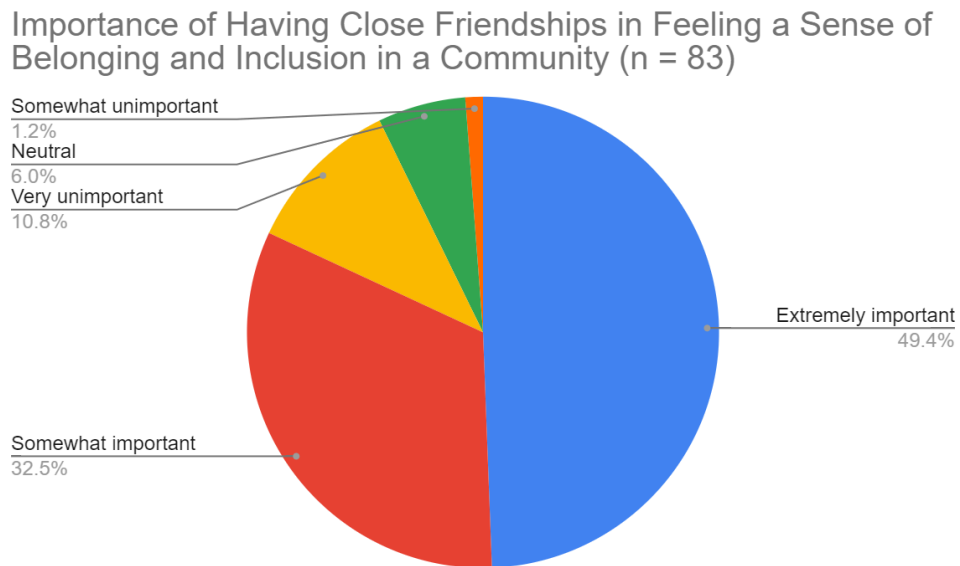


Figure 6: International student attitudes on the importance of close friendships in feelings of belonging and inclusion.

Agreement With the Following Statement: "I feel like I belong and am included in the community at WPI" (n = 83)

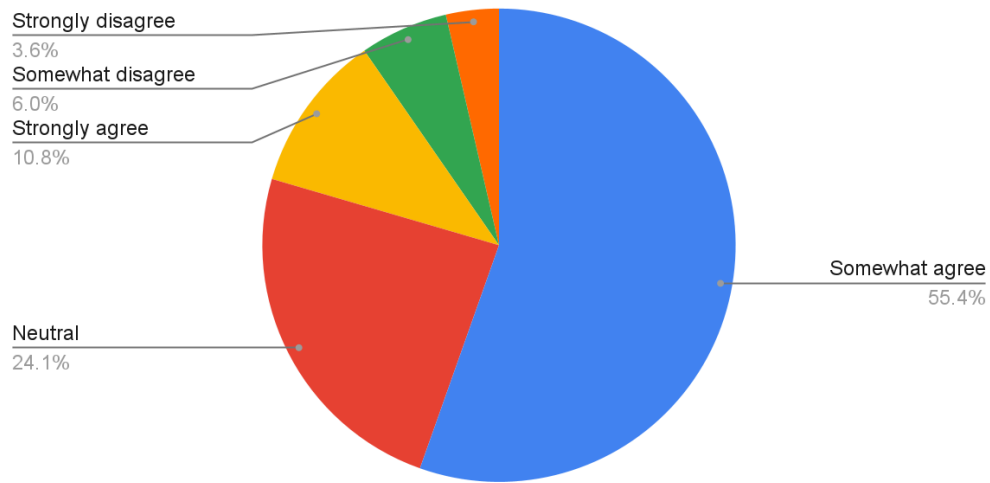


Figure 7: Feelings of belonging and inclusion among international students at WPI.

Biggest Obstacles to Finding a Sense of Belonging and Inclusion at WPI Reported by International Students (n = 80)

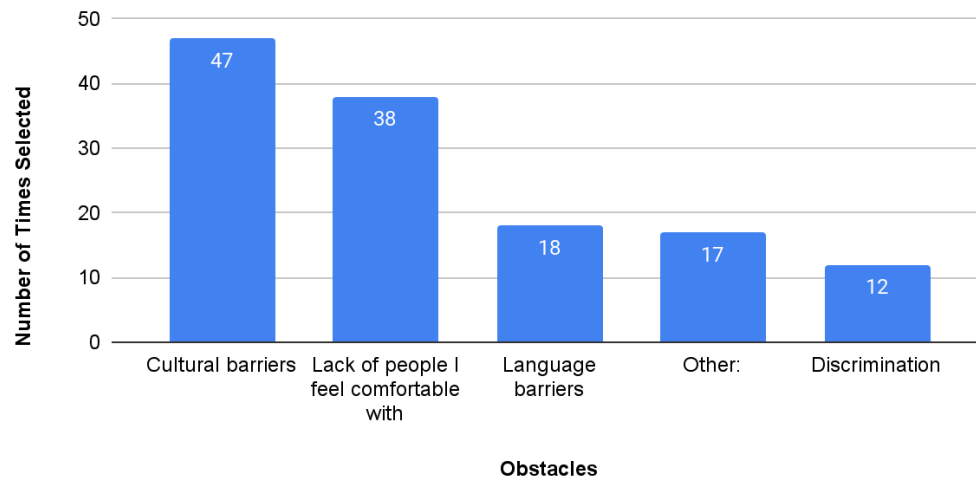


Figure 8: The biggest obstacles to finding a sense of belonging and inclusion according to international students at WPI. Respondents could select multiple options.

Frequency With Which International Students Report Feeling Isolated, Lonely, or Disconnected on Campus (n = 82)

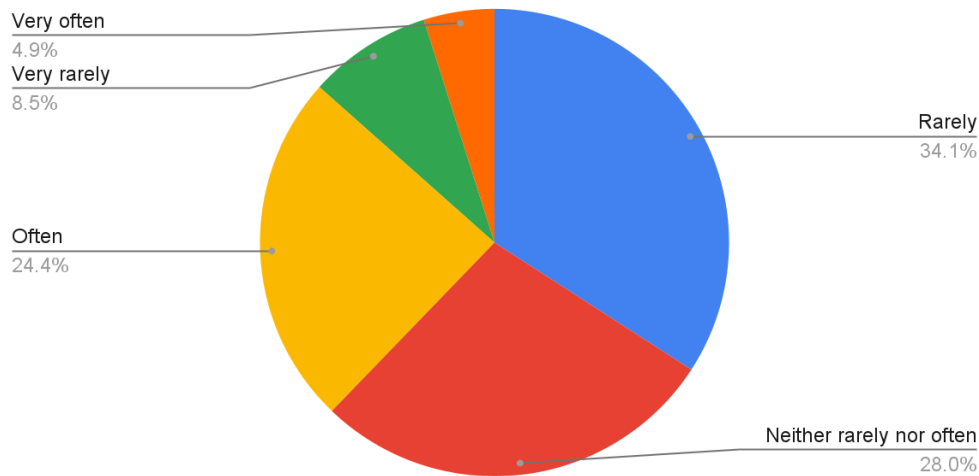


Figure 9: Isolation, loneliness, and disconnection of international students at WPI.

We hypothesized that international graduate students would struggle more with inclusion and loneliness than undergraduates due to being less integrated into campus life. However, there is no statistically significant difference in sense of belonging and inclusion $t(79.70) = .22, p = .830$ between undergraduate and graduate students. There is no statistically significant difference in reported frequency of loneliness $t(78.29) = -1.55, p = .125$ between these groups either.

It is interesting that a smaller number of respondents rarely struggle with loneliness than the amount who feel included in WPI's community. It is possible that these students have complex feelings about belongingness and loneliness, wherein they have circles of friends and feel included, but their connections are not diverse or extensive enough to be totally fulfilling. Next, we will look into the friendship dynamics of our participants to gain more insights into this topic.

Friendships and Connections

In our survey, we asked participants about their amount of friends and perceived difficulty in forming friendships in order to understand the barriers to forming intercultural connections. U.S. students were specifically asked how many international friends they have, and the responses were distributed relatively evenly; 38.2% said they have only one international

friend, 37.2% have two, and the remaining 24.6% have three (see Figure 10). Although the percentages are close in value, it can still be observed that higher numbers of international friends were less and less likely for our U.S. participants to have. As for international respondents, the majority have many international friends, as shown in Figure 11. When asked how many domestic U.S. friends they have, responses were mixed; 35.4% reported having none, while 26.8% have many (see Figure 12). Figure 13 reveals that, as expected, international graduate respondents have less American friends than undergraduates.

Number of International Friends U.S. Students Have (n = 309)

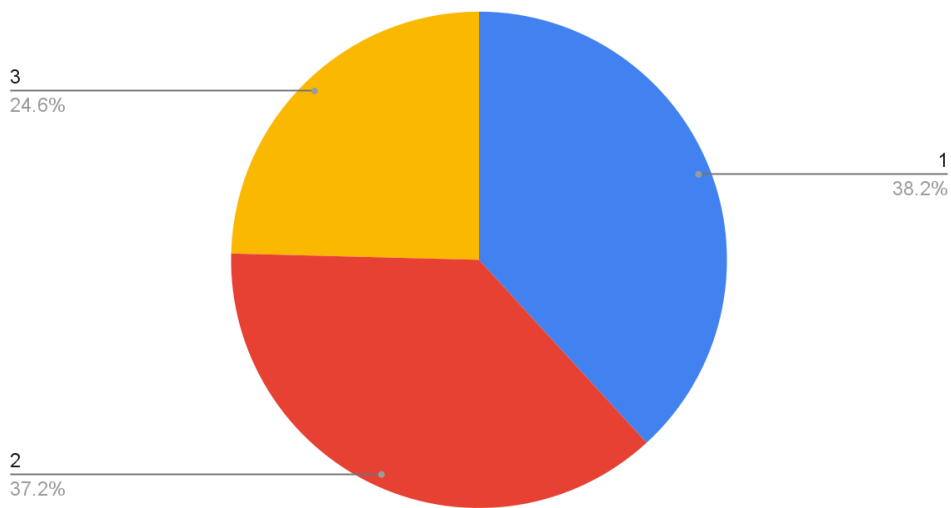


Figure 10: The number of international friends that domestic U.S. students at WPI report having.

Number of International Friends International Students Have
(n = 75)

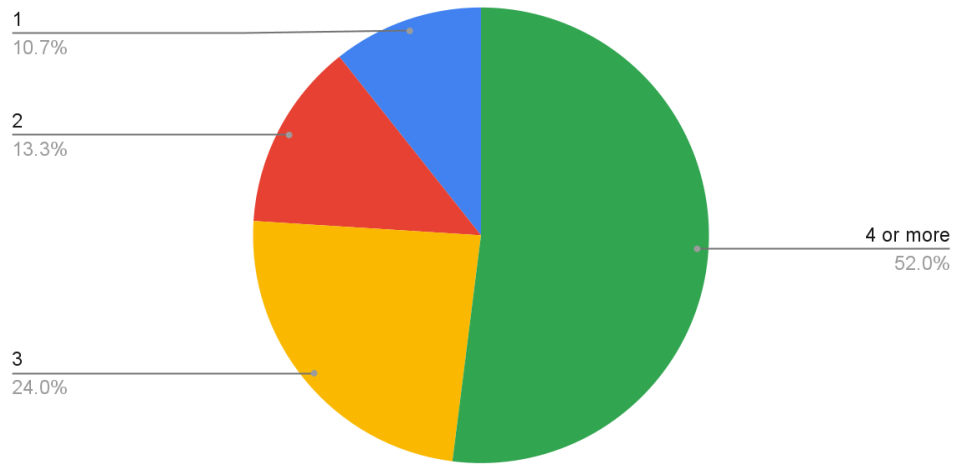


Figure 11: The number of international friends that international students at WPI report having.

Number of Domestic U.S. Friends International Students Have
(n = 82)

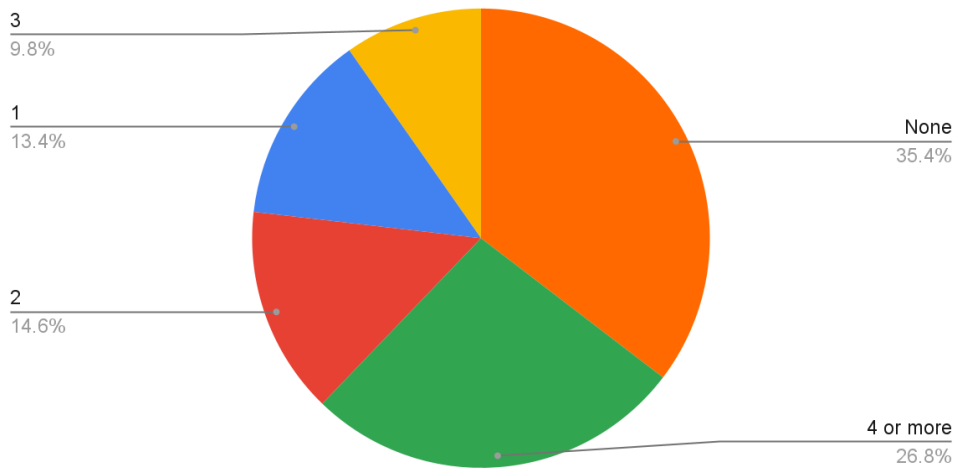


Figure 12: The number of domestic U.S. friends that international students at WPI report having.

Number of Domestic U.S. Friends International Students Have (n = 82)

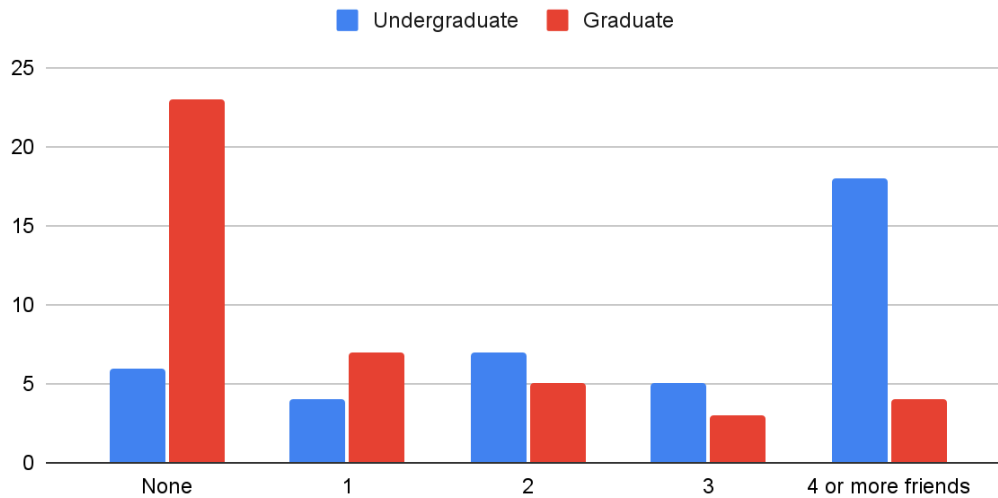


Figure 13: Comparison of undergraduate international students vs. graduate international students in terms of number of domestic U.S. friends.

As previously mentioned, some of our American focus group participants explained that they do not go out of their way to meet international students. Some also declared a lack of opportunities to meet students from different backgrounds. International participants described more of a difficulty in forming connections with U.S. students, rather than a lack of opportunities to meet. Looking at Figures 14 and 15, the most common answer from U.S. students (44.5%) on their difficulty befriending international students was neutrality. The next-most-common answers were “somewhat easy” and “somewhat difficult,” both making up 17.9% of responses. For international students, their commonly reported levels of difficulty befriending U.S. students also averaged out to neutrality, but with a more even distribution. As with the previous question, there is an observable difference in the rankings from international graduate students versus undergraduates (see Figure 16). This difference $t(106.01) = -3.54, p = .001$ is statistically significant, with undergraduates reporting higher levels of ease with making friends ($M=3.22, SD=1.07$) than graduate students ($M=2.76, SD=1.13$). This is consistent with our expectations that graduate students would have more difficulty in forming friendships due to their disconnect from the on-campus community.

Level of Difficulty U.S. Students Report With Befriending International Students (n = 586)

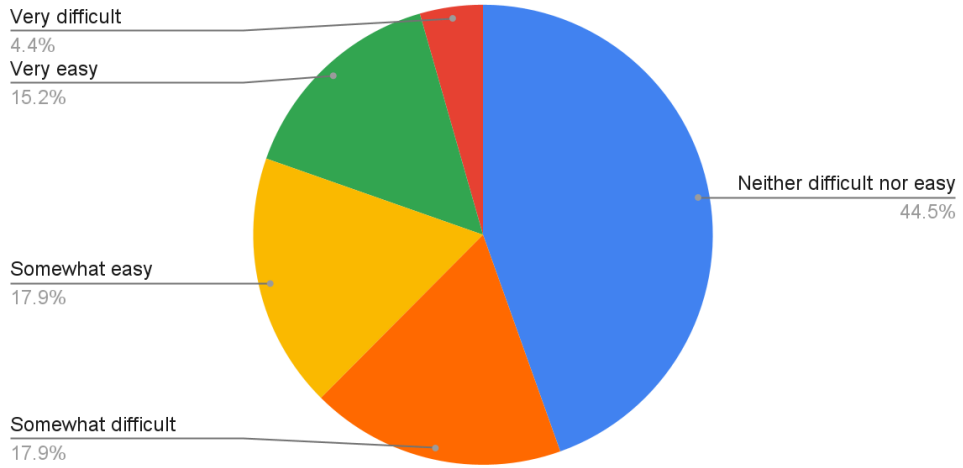


Figure 14: Reported difficulty of befriending international students according to domestic U.S. students at WPI.

Level of Difficulty International Students Report With Befriending Domestic U.S. Students (n = 83)

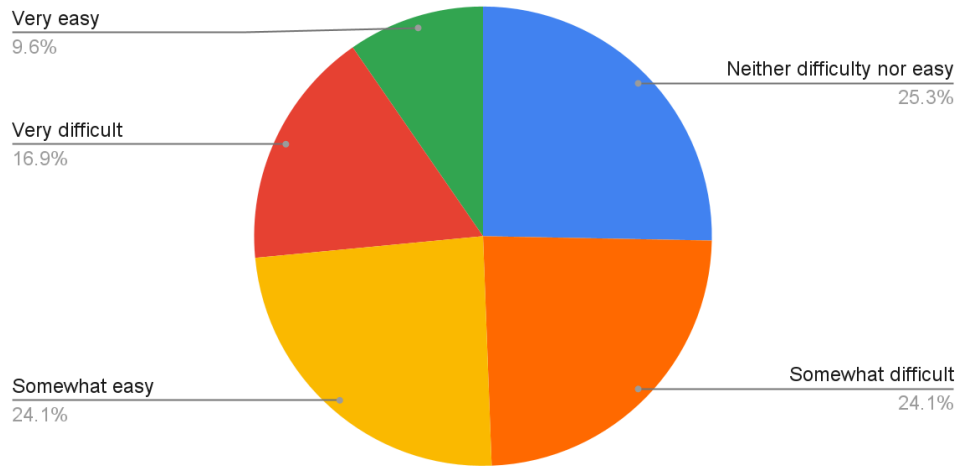


Figure 15: Reported difficulty of befriending domestic U.S. students according to international students at WPI.

Level of Difficulty International Students Report With Befriending Domestic U.S. Students (n = 83)

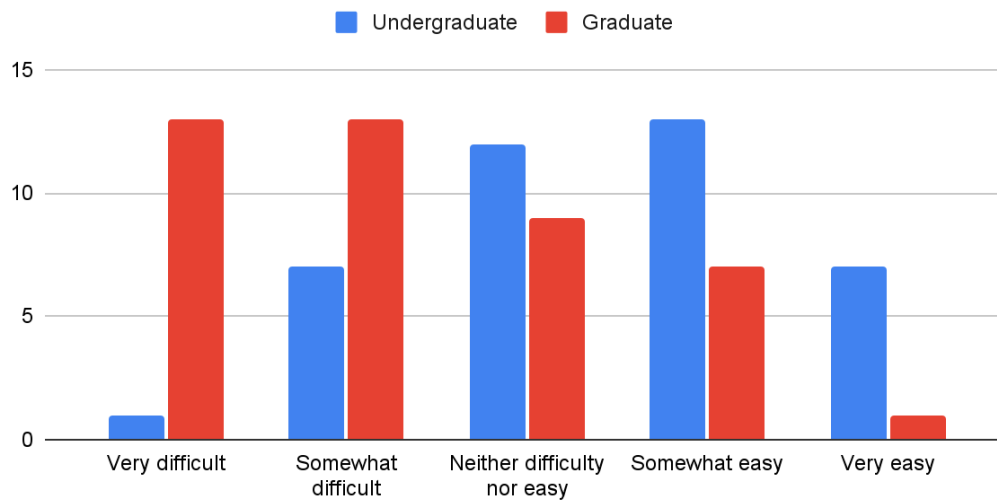


Figure 16: Comparison of undergraduate international students vs. graduate international students in terms of difficulty befriending domestic U.S. students.

When it comes to the discrepancy between the responses of U.S. and international students as a whole, there is a statistically significant difference in the ratings of this metric $t(98.69) = 2.28, p = .025$, with international students, on average, reporting lower levels of ease with making friends ($M=2.88, SD=1.23$) than domestic students ($M=3.2, SD=1.06$). This implies that the reason many international students have few U.S. friends is because they find it difficult to form connections with these students. Domestic U.S. students, on the other hand, may struggle more with meeting international students in the first place.

In fact, the survey asked students for their opinions on the biggest challenges to befriending students from other backgrounds, and this does seem to be the case. As shown in Figures 17 and 18, the most common answer from U.S. respondents was “few opportunities to meet international students,” while the most common answer from international respondents was “lack of shared interests or similar activities.” Other notable obstacles were language barriers and cultural barriers.

Biggest Challenges to Befriending International Students Reported by U.S. Students at WPI (n = 529)

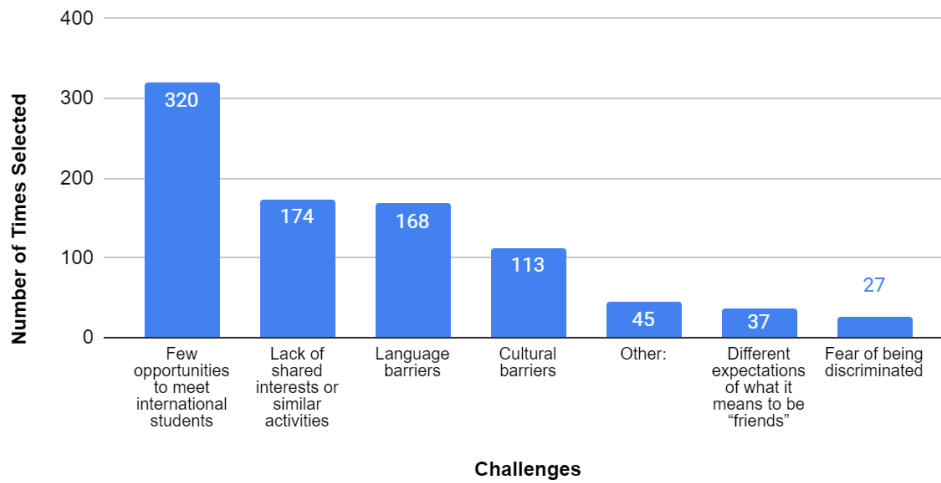


Figure 17: The biggest challenges to befriending international students according to domestic U.S. students at WPI. Respondents could select multiple options.

Biggest Challenges to Befriending Domestic U.S. Students Reported by International Students at WPI (n = 81)

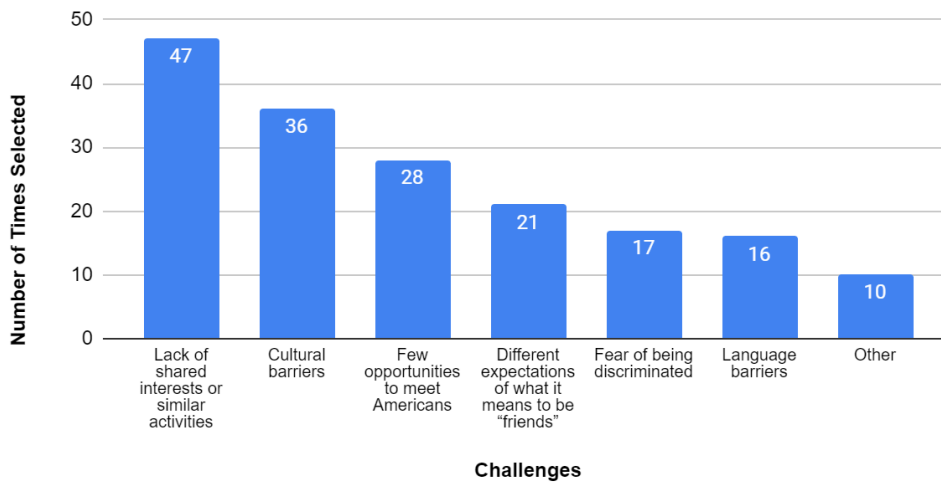


Figure 18: The biggest challenges to befriending domestic U.S. students according to international students at WPI. Respondents could select multiple options.

Our focus groups provided further insights into this topic, listed in Table 2. Many participants mentioned a difficulty in making or maintaining friendships, and some described

friendships as being higher maintenance. In college, students are busy and need to intentionally take time out of their schedule to get together with friends. There is not always time to meet new people or nurture new relationships. International students specifically mentioned an initial difficulty in making friends, as they felt like they could not easily relate to others or others were already familiar with each other.

The last multiple-choice question in our survey relating to friendship was directed at international students and asked whether they feel that friendship means something different in the U.S. than it does in their home countries. While 43.9% of international respondents agreed to some extent, 29.2% disagreed and 26.8% felt neutral. In an open response question, many international students explained the differences they perceive between concepts of friendship, often contradicting each other; one said that friendship in the U.S. is more “transactional,” while another said that, in the U.S., “friendship is more about a deep connection,” whereas in their home country, “friendship is very materialistic.” One wrote that “friends play and hang out together very often here,” while another said Americans are “not interested in doing activities together” and “just watch TV and play video games.” One wrote, “I feel Americans take a long time to open as friends,” while another wrote, “Americans are more open to being friends faster.” This could be because each respondent’s home country is different, but there is also another possibility. In our focus groups, U.S. students explained that there is not one single concept of friendship in the U.S. For example, one participant said that their understanding of friendship has changed numerous times throughout their life, while another said that some Americans find it easier to make close friends quickly than others.

Regardless, the most common explanation from international students about how friendship in the U.S. differs from their home countries was that, in the U.S., friendship is less close, more shallow, or more formal. It is possible that general cultural differences in the meaning and development of friendship make it difficult for international students to connect with Americans.

In our interview with Professor Shaw, she made suggestions towards cultivating intercultural connections (see Table 2), which may help us bridge the gap that exists between the different populations at WPI. She stated that commonalities such as shared interests or languages can create quick bonds. The professor provided an anecdote about one of her students who was randomly paired with another student from a different country; although they came from

different places, they both spoke the same language, and this instantly created a connection between them. Professor Shaw also explained that shared challenges, such as puzzles or games, can allow people to bond over working towards a common goal. She gave the example of *Pokémon GO*, which had, in the past, brought together unlikely groups within the WPI populace to take down in-game bosses that they could not defeat alone. Finally, Professor Shaw expressed that we must be deliberate in creating opportunities for cross-cultural connections, as we cannot assume that students are forming long-term relationships through class projects, and furthermore, we should encourage students to exchange contact information during projects, activities, and events, lest they feel too awkward or timid to do so without suggestion.

Table 2: Codes Relating to Friendships and Connections

Code	Number of Participants who Mentioned It
International students tend to stick together	5/12 (41.7%)
Trouble developing and maintaining close friendships	3/12 (25%)
Have to be more intentional in maintaining friendships	3/12 (25%)
There is an initial cultural barrier in intercultural interactions, but it's surpassable	3/12 (25%)
There is not one single concept of friendship in the U.S.	3/12 (25%)
Friendships are more transactional in the U.S.	1/12 (8.3%)
Trouble befriending Americans	1/12 (8.3%)
Lonely	1/12 (8.3%)
Deals with loneliness by studying or chilling on campus	1/12 (8.3%)
There are general cultural differences between the concepts of friendship in different cultures	1/12 (8.3%)
We can't assume students will form connections in the classroom, and thus must be deliberate in how we structure these things	1/12 (8.3%)
People connect through shared languages	1/12 (8.3%)
Encourage people to exchange contact info because they might feel awkward doing it on their own	1/12 (8.3%)
Working together on a challenge promotes social harmony	1/12 (8.3%)
Shared interests bring people together	1/12 (8.3%)

Opportunities for Intercultural Meetings

To address the barriers to forming cross-cultural connections presented by U.S. participants, it is necessary to think about ways to create more opportunities for U.S. students and international students to meet. Table 3 contains insights into this topic. Many focus group participants stated that they meet people through clubs and events and that WPI should host more events to create more opportunities for intercultural meetings. Students were particularly interested in intercultural events or events with free food. Many claimed that free food is a motivator for students to attend events. Participants also informed us that graduate students are not notified about on-campus events. This can feel isolating for them, as there are rarely any graduate student social events, and likely contributes to their heightened difficulty in forming connections on campus.

Another major desire of the students in our focus groups was to have more social spaces on campus. Participants noted that there are plenty of spaces to study with others, but they would prefer areas with the express purpose of meeting people and hanging out. One student mentioned puzzle tables, which would provide students with a shared challenge—something that, as previously stated, can encourage students to form connections.

A few participants said that projects are a way for international students to form connections or grow more comfortable with U.S. students. With more deliberate planning of such opportunities, as suggested in the previous category, class projects could be a great way for students to meet new friends. However, there is still a sentiment that there are not any natural ways to meet and befriend international students as a domestic U.S. student.

Lastly, there were mentions of IQPs being a potential avenue for cross-cultural connections. U.S. students going abroad will learn about a new culture, but there is also an opportunity for them to learn about their host country beforehand. In fact, in our interview with staff from the Global Experience Office, it was suggested that U.S. students prepare for their off-campus IQPs as early as possible. The Global School works with the Forum on Education Abroad to better help students prepare for the intercultural exchanges that are to come. However, some students expressed dissatisfaction with the pre-departure preparatory material and period.

Table 3: Codes Relating to Opportunities for Intercultural Meetings

Code	Number of Participants who Mentioned It
Meets people by going to clubs or events	5/12 (41.7%)
More (intercultural) events (with free food) could help form connections	4/12 (33.3%)
Have more spaces for students to hang out (not work)	3/12 (25%)
Pilot program (pairing Chinese learners with non-native English learners) was a good idea	3/12 (25%)
International students can be resources for U.S. students going abroad	3/12 (25%)
Projects give an opportunity to socialize	2/12 (16.7%)
Communicate events better to graduate students	2/12 (16.7%)
IQP is the best opportunity for intercultural exchanges	2/12 (16.7%)
Having to work with Americans on projects made it easier to open up	1/12 (8.3%)
Not enough cultural clubs	1 (8.3%)
No organic ways to meet international students as U.S. domestic students	1 (8.3%)

Culture Shock and Adjustment

Figures 19 and 20 illustrate our international respondents' levels of comfort and success with navigating U.S. culture on WPI's campus. The most common responses for both were "somewhat comfortable" and "somewhat successful." This is uplifting information but does suggest that there is room to improve the support offered to international students in their transition.

International Student Comfort With Navigating the U.S. Culture on Campus (n = 83)

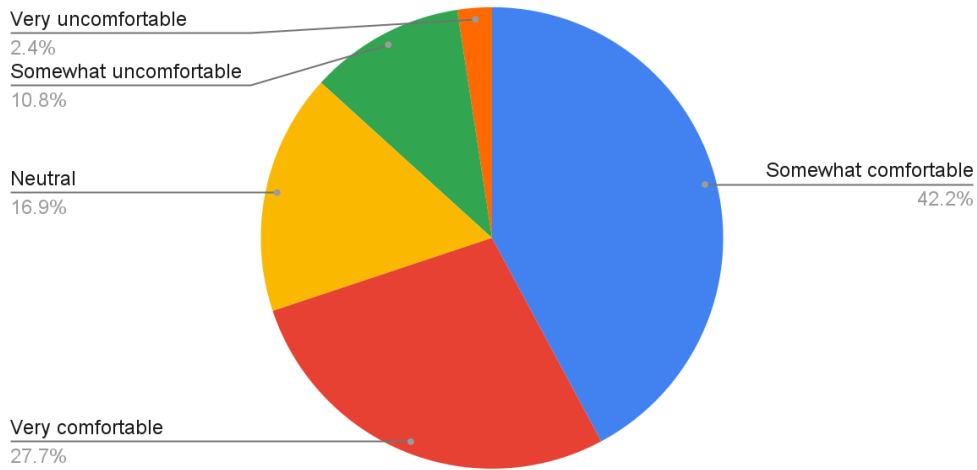


Figure 19: Comfort levels reported by international students at WPI regarding navigating the U.S. culture on campus.

Level of Success International Students Report With Navigating the U.S. Culture on Campus (n = 83)

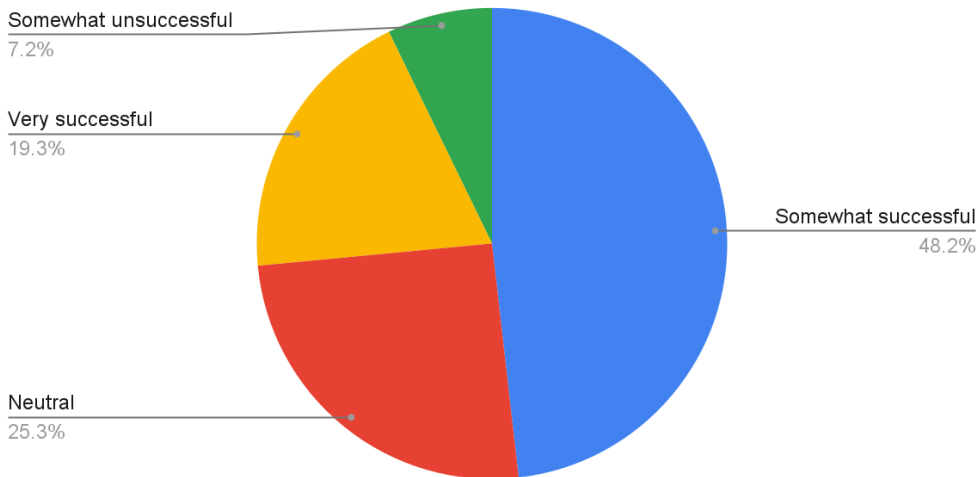


Figure 20: Success with navigating U.S. culture on campus as reported by international students at WPI.

Although survey participants largely claimed to have adapted well to U.S. culture, international students in our focus groups revealed some of the stressors they face, and their comments can be seen in Table 4. Many deal with homesickness, and some miss food from

home, lack confidence in their English and communication abilities, or find it difficult to relate to Americans. These difficulties align perfectly with the challenges laid out in our literature review, reaffirming our existing knowledge. As for the American participants, a few of them worried that they would experience culture shock in their IQP country. This strengthens the idea that U.S. students should receive more support and preparation before going on IQP.

Table 4: Codes Relating to Culture Shock and Adjustment

Code	Number of Participants who Mentioned It
Homesickness is a significant problem for international students	4/12 (33.3%)
Hard to relate to U.S. students	2/12 (16.7%)
Americans think they will experience culture shock during their IQP	2/12 (16.7%)
Unconfident in oral communication	1/12 (8.3%)
Miss food from home	1/12 (8.3%)
WPI is more white than expected	1/12 (8.3%)

Cultural Differences

Similar to the previous category, this one consists of the cultural differences international students must face when coming to the U.S. (see Table 5). Many of these are, once again, parallels to the factors we discussed in our literature review. A very specific point that was reaffirmed was that the participation requirement in U.S. classrooms can be uncomfortable or difficult to adjust to for students from other countries. What is new information for us, however, is the fact that the U.S. is very monolingual, whereas, in other countries, citizens may use more than one language in everyday life.

Table 5: Codes Relating to Cultural Differences

Code	Number of Participants who Mentioned It
The U.S. is more independent than collectivist	2/12 (16.7%)
Multilingual in home country, monolingual in U.S.	1/12 (8.3%)
Different values	1/12 (8.3%)
Different learning style in U.S. (participation)	1/12 (8.3%)
Cultural differences aren't explained	1/12 (8.3%)
Language barrier	1/12 (8.3%)

Lifestyle

A theme in the codes listed in Table 6 is that many students feel they succeed to some degree with work-life balance, and it seems to be dependent on factors such as workload. This suggests that students are feeling better than expected compared to our conclusions from the background information we researched about the mental well-being of college students. However, the codes relating to international students reveal the unique stressors they experience. A couple of the responses reinforce information from our literature review, as well as other focus group feedback. For example, adapting to living alone and to the U.S. or WPI school system are stressors we discovered in our background research. The latter also relates to the point about learning styles in the previous category of codes.

The point listed in Table 6 about international student life being more costly is new but intuitive; moving to a new country can be expensive, especially when one is alone. Additionally, international students do not receive as much financial aid as other students, because their status as non-U.S. citizens makes them ineligible for certain jobs, fellowships, and scholarships. This can heighten the difficulty they experience with adapting to their new lives as college students in the U.S.

Table 6: Codes Relating to Lifestyle

Code	Number of Participants who Mentioned It
Doesn't struggle with work-life balance much	5/12 (41.7%)
Copes through distraction	2/12 (16.7%)
Copes by being active	2/12 (16.7%)
Social life is the same here as in home country	1/12 (8.3%)
Everything goes fast here	1/12 (8.3%)
Adapting to living on your own is difficult	1/12 (8.3%)
Heavy workloads cause students to participate less in clubs	1/12 (8.3%)
Grad students' work-life balance very different than undergrads; less social	1/12 (8.3%)
Work-life balance depends on the term	1/12 (8.3%)
Because of FOMO, tried to do everything and ended up exhausted	1/12 (8.3%)
International students struggle adapting to the academic calendar	1/12 (8.3%)
International students need to pay a lot more than a domestic student	1/12 (8.3%)
It takes more stress and effort for international students to succeed compared to domestic U.S. students	1/12 (8.3%)

Support Networks

In this category, we studied the usual places and relationships that our participants resort to in times of struggle (see Table 7). It is worth noting that most participants feel like the faculty and staff at WPI care about their mental health and well-being. A few students mentioned that during times of struggle, they feel more pressure from their professors to complete the required

work. Most of our participants resort to their family and friends when it comes to their personal life, with only one student mentioning that they have used WPI's SDCC. As mentioned during the focus groups, a lot of students hesitate to use campus resources like the SDCC because the waiting time for an appointment is longer. In terms of academic struggles, the management is varied. It is fair to say that most of our participants look for academic help from higher-ups, such as graduate students, academic advisors, and professors.

Table 7: Codes Relating to Support Networks

Code	Number of Participants who Mentioned It
Faculty and staff care about our mental health and well-being	9/12 (75%)
Reaches out to friends/family for personal life	6/12 (50%)
Some professors place more pressure on students to finish work	3/12 (25%)
Reaches out to classmates for academic help	2/12 (16.7%)
Reaches out to advisors for academic help	2/12 (16.7%)
Talks with people from home country when lonely	2/12 (16.7%)
Reaches out to grad students for academic help	1/12 (8.3%)
Reaches out to professors for academic help	1/12 (8.3%)
Reaches out to TAs for academic help	1/12 (8.3%)
Goes to SDCC for personal life	1/12 (8.3%)

Feedback Regarding Our App Idea

When running our focus groups, we asked participants how they felt about the idea of an app with the purpose of connecting international WPI students with domestic U.S. WPI students. There were mixed responses to the idea of the app, all listed in Table 8. Some participants thought it was a good idea and were enthusiastic about forming cross-cultural connections in the

digital world. Others felt hesitant, citing the awkwardness of online first conversations. On the other hand, when interviewed, the staff from the Global School stated that meeting through an app could reduce awkwardness or anxiety.

A popular idea was for the app to suggest on-campus activities people could do together. Many felt that a strictly online relationship would not last. There were also requests to allow users to choose to be in a group rather than paired with one other person. This could alleviate some of the awkwardness. There were various other ideas that participants presented, such as pairing U.S. students with international students from their IQP location, allowing users to enter their availability, and filters.

The app may not be for everyone, but it is clear that there is a market for it, and many of the disadvantages can be worked around.

Table 8: Codes Relating to the App

Code	Number of Participants who Mentioned It
An app would be beneficial	6/12 (50%)
Unsure about app	4/12 (33.3%)
The app should suggest on-campus activities for people to do together	4/12 (33.3%)
The app should allow users to choose to be put in a group	3/12 (25%)
The app should pair U.S. students with international students from their IQP country	2/12 (16.7%)
The app could lead to awkward first conversations	2/12 (16.7%)
The app needs an incentive to use it	1/12 (8.3%)
The app should allow people to put their availability	1/12 (8.3%)
The app should allow users to filter other users by graduate/undergraduate	1/12 (8.3%)
Meeting at first through the app might reduce anxiety, awkwardness, and fear of rejection	1/12 (8.3%)

Resources for International Students

Resources at Peer Universities

With the well-being of international students in mind, universities must have resources available to aid in these students' transitions to the United States. Ideally, they would also have programs that help to integrate international students into the social community of the school. We looked into seven other universities—Case Western Reserve University (CWRU), Rochester Institute of Technology (RIT), Rensselaer Polytechnic Institute (RPI), Stevens Institute of Technology, Illinois Institute of Technology (IIT), Northeastern University, and College of the Holy Cross—to take note of what resources and programs they offer.

Peer universities typically have a physical office for international students, as well as offering virtual consulting sessions. They generally have around eight employees working at the international student office (*About, n.d.; International Services for Students and Scholars, n.d.; International Student and Scholar Services (ISSS), n.d.; International Student Resources & Engagement, n.d.; International Student Services, n.d.; Office of Global Services, 2024; Office of International Students, n.d.*). The purpose of these offices is for international students to turn in documents and receive support in their transition to the United States. There is a range in the amount of multicultural clubs and organizations at each school studied, with Stevens Institute of Technology having at least 21, and College of the Holy Cross having only nine (*Clubs & Organizations, n.d.; Club Singup, n.d.*). At both of these schools, 3% of the undergraduate population consists of international students (*Facts and Figures, n.d.; Holy Cross at a Glance, n.d.*).

The colleges all have an international student orientation, but usually only one day long. International graduate students generally either do not have their own orientation, or they partake in the first-year undergraduate international student orientation (*Gateways International Student Orientation, n.d.; International Student Orientation, n.d.; International Student Orientation, 2022; International Student Orientation, 2024; New F-1 students, n.d.; Orientation, n.d.; Orientation, n.d.-b*). Some schools, such as Stevens and IIT, have immigration and visa advising for international students (*Contact Us & Advising Hours, n.d.; Office of Global Services, n.d.*). A couple of the universities have counseling center employees that specialize in international students or that offer multilingual counseling appointments, but most do not (*Meet the staff, n.d.; UHCS Staff, 2024*).

A lot of the schools have peer mentorship programs. CWRU has the Collegiate Connections Peer Mentoring Program, which matches first-year underrepresented international students with upperclassmen (*Collegiate Connections Peer Mentoring Program, n.d.*). RPI has a STRIVE program for underrepresented first-year and transfer students which also offers “personal and professional enrichment opportunities” (*STRIVE | Student Success, n.d.*). The College of the Holy Cross has a mentoring program that supports international students and those in the Passport Program (*The Mentor Program, n.d.*).

Most of the researched colleges have programs to help enhance international student life and connections. Some have cultural exchange events, such as Stevens’ weekly Culture and

Conversation Hour or IIT's International Festival. IIT additionally has workshops on issues affecting international students, an English Conversation Partner Program, and tours (*About, n.d.; Programs for International Students and Scholars, n.d.*). RIT participates in a program connecting the Greater Rochester community with international students (*Resources | International Student Services, n.d.*).

Resources on Worcester Polytechnic Institute's Campus

Worcester Polytechnic Institute has an international student office dedicated to supporting these students as well as cultural clubs. WPI has 18 staff members working in the Office of International Students and Scholars. It holds a three-day international student orientation for undergraduates, but international graduate students only have a one-day orientation. The International House has a peer mentoring program for first-year international students and also hosts other programs. Meanwhile, International Student Life provides immigration and employment counseling.

Notably, Associate Teaching of English Language Learning Professor Althea Danielski has held a cross-cultural pilot program in which Chinese international students were paired with U.S. resident students learning Chinese. Feedback from this program suggested that it was an enriching experience that could use some improvements, but ultimately, was extremely valuable for learning about other cultures and perspectives. In terms of criticism, students wanted the program to last longer, they wanted more preparation, and they wished to be able to choose their own exchange partners. Overall, the temporary pilot program was successful and will pave the way for future programs at WPI.

In our focus groups, we asked students for their thoughts on WPI's existing resources and their impact (see Table 9). The common theme was that the resources in place are not as helpful as they could be and that more informational resources are desired. Students did express the desire for there to be places and people who are readily available to support international students. Most international students do not see the International House as a place where they can go for support that is not regarding migratory issues. Focus group participants mentioned how the stigma surrounding loneliness might also stop students from seeking more support and being open about struggles.

In our interview, Professor Stacy Shaw mentioned that a peer mentorship program may be helpful. The existing program run by the International House only requires the peer mentors to assist the new students for the fall semester. Something more long-term may be beneficial in encouraging lasting support and well-being for international students.

Table 9: Codes Relating to Campus Resources

Code	Number of Participants who Mentioned It
Difficult to get support from on-campus resources for loneliness/belonging	4/12 (33.3%)
Goes to SAO events with existing friends, so doesn't make friends through it	2/12 (16.7%)
International students need a place/person they know they can go to if they need something	2/12 (16.7%)
Not many resources for grad students	1/12 (8.3%)
The SDCC is very booked and busy	1/12 (8.3%)
A presentation about American education style for international students at the start would be helpful	1/12 (8.3%)
PQP approaches intercultural education poorly by presenting other cultures as “other” to the U.S. and lacking cultural immersion	1/12 (8.3%)
A peer mentorship program could be beneficial	1/12 (8.3%)
ProjectConnect is a more friendly environment than other events and resources	1/12 (8.3%)

WPI’s current resources, as well as our knowledge of those at other schools, can serve as the foundation of a program to improve international students’ well-being. Knowing the benefits and limitations of the current support systems on campus, along with students’ feedback on the

other topics discussed, allowed us to formulate recommendations for bettering student wellness and fostering intercultural competency among WPI's student population.

Chapter 5: Conclusions and Recommendations

Over the past few years, WPI has made a growing effort to foster an environment where personal well-being is prioritized, seeking to allow students, faculty, and staff to have a more balanced experience at WPI. To support these efforts, we have studied the different support networks offered to international students. To pinpoint some of the major factors negatively affecting the well-being of the international student body at WPI, we surveyed a total of 671 students, interviewed 4 staff members, and led 5 focus groups. Using the information we gained from the community, we are prepared to make recommendations to improve the well-being of international students and intercultural competence of domestic U.S. students at WPI.

Program

Although we were unable to develop a specific program that would bring these recommendations together, we have made significant progress to lay the foundation of what the program could become. Since the main goal of the program is to foster intercultural connections that would support international students while seeking to improve the intercultural competence of domestic U.S. students, the foundation for the program would be intercultural events that are especially directed towards first-year international students and WPI students who preparing for their Interactive Qualifying Project (IQP) abroad. As a part of our recommended program, WPI should host more intercultural, challenge-based, and active events. At these events, students should be encouraged to meet new people and share their contact information, as suggested in our interviews. After careful study of the different offices and departments at WPI, we have identified the departments who could outsource these events, which are the Provost Office and Graduate and Undergraduate Studies. We reached this decision especially after the realization that our study is directly connected to WPI Undergraduate Learning Outcome #8, which states:

“Graduates of WPI will demonstrate global and intercultural competency by developing the capacity to identify, explain, and critically analyze the forces (such as cultural, historical, political, economic) that shape the self and others as they engage with local and global communities.”

Our study and recommended program directly fall under the above mentioned Undergraduate Learning Outcome. The program would be event-based, and the app we discuss later can be used as a tool complementary to the program.

Events

The idea of on-campus events fostering relationships was a popular one in our focus groups and interviews, with five participants saying they meet people through clubs or events and four saying there should be more of them—particularly intercultural events and events with free food. Intercultural events would encourage international students to attend and would facilitate engagement in other cultures. Such events may be key to fostering intercultural competency. Free food, meanwhile, serves as an incentive for all students to attend. Allowing students to share cuisines from their home countries would both promote intercultural exchange and be an engaging and rewarding activity.

In our interview, Assistant Professor Stacy Shaw detailed the importance of shared challenges in creating bonds. Events with puzzles or games in which students must work together towards a shared goal may be more effective in forming long-term connections than other types of events. Events that involve getting active are important as well, as fitness is an essential aspect of well-being. Moreover, as Professor Shaw stated, active rest is more helpful than rest through passive entertainment, since it helps to get one's mind off of life's stressors. Events involving getting active, like nature walks during A Term, or nights where dances from different cultures are taught, amongst other ideas, may directly improve well-being while simultaneously encouraging students to form connections. These types of events could be done in partnership with the Center for Well-Being, different cultural clubs, and the Student Government Association.

Application

As a part of the program, we recommend creating an application similar to a dating app but with the purpose of forming connections between international and U.S. domestic students at WPI. Our rationale is that some students may feel too timid or insecure in their communication skills to approach other students in person. An app could help bridge the gap and encourage more introverted students to make connections. The Global Experience Office supported this

idea in our interview, stating that meeting first through the app might reduce anxiety, awkwardness, and fear of rejection. Furthermore, since our data suggests that shared interests can help create long-lasting connections, we believe an app could help form friendships by pairing students together based on common interests.

When creating a profile, users would write a short biography and select interests from a list. They would also indicate whether they are an international or U.S. domestic student, their country of origin, languages they speak, whether they are an undergraduate or graduate student, their class year, and their IQP location (if known). This information would help with determining which students might get along well with each other. An algorithm would suggest “matches” for students based on their interests, but users would also be able to choose their own conversational partners. This would allow them freedom which, according to the feedback from Associate Teaching Professor Althea Danielski’s pilot program, is highly desirable. When choosing who to talk to, students could filter other users by certain attributes. For example, a user could see a list of graduate students if they are looking for advice or a mentor-like relationship from someone with more experience. Students could also match with others who speak the same language as them or who are from the country their IQP is located in. Learning more about their IQP country may be a key incentive for U.S. students to use this app.

A messaging system would be ideal, although it may be more difficult to implement. Based on feedback during focus groups and interviews, it may be beneficial for the app to suggest conversation topics, as two of our research participants felt that the app may lead to awkward first conversations that do not result in a long-term connection. These topics could range from typical small talk to more thought-provoking questions that encourage discussions of cultural differences. The app should also suggest on-campus activities for paired students to do together, especially those that are part of our recommended program. This would also encourage international students to attend events that are not strictly intercultural. The events involving shared challenges would be of particular use in this context. Finally, users should be able to form groups rather than pairs if they wish, as requested by three of our focus group participants.

After deciding on the high-level design and features of the app, we had to discuss the technical details. The first decision we had to make was whether it should be a web app or a mobile app. A web app is an application accessible online through a web browser, while a mobile app is an application downloaded to a mobile device through the operating system’s

built-in store. This decision would influence the interface design of the application, as well as the technical decisions, such as the frameworks used. For example, Swift is typically used to develop iOS apps, while Android has a specialized development environment called Android Studio. A web app could be developed in HTML and JavaScript, Python and Flask, or any number of other languages and frameworks.

Each option has its own benefits and drawbacks. Web apps are more flexible, as they can be used from any device with a web browser. They may also be easier to develop, as they do not need to be built for different operating systems. However, they are more difficult to navigate to. Mobile apps are perhaps more accessible since they are available on the device's home screen; furthermore, younger generations are increasingly using mobile apps more often than computer programs, so they may be seen as more desirable and convenient. However, mobile apps cannot be accessed from computers without the use of an emulator, and their development is more complicated, requiring builds for both Apple and Android devices. Hosting these apps can also be costly, as the Google Play Store has a one-time fee of \$25 to distribute applications, while the Apple App Store has a \$99 yearly fee (*How Much Does It Cost to Put an App on App Store?*, 2024). Finally, mobile apps are accessible to all users, meaning anyone with an up-to-date mobile device can download them; while we can require users to sign into a WPI account to use the app, consumers may find it confusing that the app is publicly available but only usable by students of a specific university. Contrast this with a web app which can be hosted on the university website, rather than advertised publicly to a larger user base.

Considering the advantages and disadvantages of each approach, we decided that a web app would be more effective and realistic. It would be easier and less costly to produce, and it would allow for more flexibility. To make up for some of the missing benefits of mobile apps, we recommend creating a responsive website that adjusts seamlessly to mobile device resolutions, as well as including instructions on how to save the website to a mobile device's home screen.

When it comes to web apps, there are many popular languages and frameworks to use. One combination that stands out is Python with Flask (SDEVtech, 2023). Python is a simple language that is easy to pick up, and many students at WPI learn it regardless of their major. Flask allows for flexibility—as developers can write custom HTML, CSS, and JavaScript—while also providing templates with its dependency Jinja (Pallets Projects, n.d.).

Additionally, SQL will be necessary to write to and retrieve from a database. See Appendix E for a database schema.

Graduate Students

One of the areas of enhancement for WPI is the inclusion of graduate students at social events on campus, which is a multi-layered issue. Communication with graduate students about events happening on the central campus should be improved, which also leads to our other recommendation, which is better education for student-run clubs and organizations about the laws regarding graduate student members and the funding these students can receive. Given clubs and organizations fall under Student Activities Office (SAO), this information could be included in the Student Organization Manual that is published every academic year before the start of the Fall semester. According to our findings from the focus groups and survey, international graduate students seem to be amongst the most alienated groups on campus. Non-U.S. resident graduate students make up 57.86% of total graduate students at WPI (as of 2023 Fall Semester according to the official WPI database). Just like undergraduate students, social events on campus also bring graduate students together. However, many graduate students reported feeling mostly unaware of what goes on on-campus. A way to address this can be spreading the marketing of events to include graduate student buildings like 50 Prescott and Gateway, as well as including graduates on some of the weekly newsletters that are sent out. Both the spreading of the marketing in graduate buildings and the emails and newsletters could be an initiative overseen or spearheaded by the Graduate Student Government. However, this also brings another issue to the light: student-run clubs and organizations, who run most of these on-campus social events, are not well informed on how to include graduate students in their events. The fundings clubs receive from the Student Government Association (SGA) can only be spent on undergraduate students. There is, however, a Graduate Student Government, which could potentially provide clubs with funds that can cover the cost for graduate students. Both domestic U.S. graduate students and well as international graduate students expressed the wish to have more contact with the undergraduate community.

Peer Mentorship

The international student peer mentorship program at WPI could be improved, and international students would benefit from having long-term peer support. This peer mentorship program is currently run by the International House and International Student Council. It runs during the Fall semester, but it could be beneficial for the first-year international students to have this program run year-long, with a more involved period in the Fall semester. To best equip the peer mentors, additional training could be given by a representative from the Center for Well-Being (CWB), given the CWB is now launching a full-time peer coaching program. Furthermore, our interview with the staff at Global Experience Office revealed that starting connections before students arrive on campus would be beneficial. Such a program could be integrated with the web app; a good starting point for the app would be allowing incoming international students to opt in and then pairing them with U.S. students going on IQP in their home country. This would allow for a mutually beneficial relationship, where both parties learn about the other's culture.

Hangout Spots on Campus

Three of our focus group participants, as well as some of the interviewed staff, mentioned the benefit that more spaces on campus to hang out and meet other students would bring. Students, both graduate and undergraduate, reported that there are little to no ways of organically meeting international students. One suggested puzzle tables as a way to pass the time and collaborate with others. One of the specific suggestions made by students was to have social spaces at the graduate student buildings, especially those that are not part of the central campus. With more spaces on campus to relax instead of work, there would be more opportunities for students to meet and form cross-cultural connections.

A space like this could also take the form of a lounge. WPI already has the Lavender Lounge, a space for the LGBTQ+ community on campus; the Lotus Lounge, a space for Asian-identifying students; and the lounge in the Center for Black Excellence. An additional space like this could be created for international students, both graduate and undergraduate. Another option is turning the International House into a hub for international students. International students reported that they do not frequent this office, only using it when visa, tax, or official document related needs arise. By hosting more events, such as an annual celebration

for international students that welcomes all, the International House can reinvent its image as a more welcoming and homey space rather than just a resource.

The IQP Experience

We need to equip students who are going abroad for their interactive qualifying project (IQP) with the tools necessary to better navigate their intercultural exchanges and the cultural differences they will experience. The better prepared students are before they go abroad, the better their intercultural experience will be. As described during our focus groups, students report that IQP is the best opportunity they get for intercultural exchanges. However, most students, once already abroad, report that they wish they had prepared better. Students need more cultural exposure, but they also need to learn to make a meaning out of cultural differences. Students reported they did not feel ready to face culture shock during their IQP. Exploring these cultural differences with authentic wonder rather than judgment, not labeling them as “good” or “bad,” but seeing them as unique and worthy of respect is a huge part of dealing with culture shock. International students can be resources for the students going abroad for an off-campus IQP. As mentioned before, the application we have started to design can be a helpful tool allowing students going on IQP to make a connection with someone from the country they will be visiting.

More Orientation for International Students

One participant in our focus groups suggested that WPI give a presentation to international students about the American education style. This participant, as well as our background research, made it clear that adjusting to U.S. classrooms can be difficult, particularly when it comes to participation. An explanation of what will be expected of these students before classes start could be beneficial for them. This could be integrated into the schedule for International Student Orientation (ISO), and the presentation could be imparted by Academic Advising.

Finances are a point of great concern for international students, both at and outside of WPI. The International House offers financial workshops, particularly pertaining to taxes. Students have reportedly found this useful. Another orientation suggestion from a staff interview

was explaining U.S. health insurance. An additional added workshop could explain how health insurance works in the United States and where to go in cases of health-related needs.

Future Work

As mentioned above, we unfortunately could not meet our goal of developing a cross-cultural connections program that integrates most of the recommendations. However, if this study is to be followed up in the future, we will suggest what some of the next steps are.

To better plan the program, a specific series and types of events that facilitate cross-cultural exchanges must be determined. Conversations should be held with representatives from different cultural clubs to learn which types of events have the highest attendance numbers and which events receive the best feedback. We would also recommend starting the interview process earlier in the study. We were unable to meet with as many peer universities as we wanted due to time and communication constraints. This is why we recommend scheduling interviews as early as possible.

An essential part of our project is the web app we are developing. With the database schema that we are providing, a working prototype can be developed. However, as we have learned from the different interviews, the completion of the app would be a great tool, which is why we've laid the groundwork for it.

Supporting students through the cultural differences is not the limit, though it is a huge part, of the pre-departure preparation they receive. In terms of students traveling abroad for their IQP, we need to equip the advisors traveling with students so that they can better support students through the transition. The Forum on Education Abroad has published academic journals and articles where they explore and elaborate on how to better equip faculty and staff to better help students regarding education abroad. These published journals and the Forum itself could be great resources to delve deeper into the recommendations to be made to improve pre-departure IQP resources, while also improving the formation given to project center advisors.

WPI, with its strong commitment to well-being and community, offers a wide range of resources to its students. The international student community at WPI, like at other institutions, teaches the larger community lessons on diversity, deepened learning, empathy, and ultimately

helps their peers prepare for a globalized future. Throughout our study, through our research, survey, and the conversations held with students, faculty, and staff, we were able to identify what the suggested best practices in order to better support our international student community are. Diversity on campus is something to be celebrated, and one of the best ways in which we can do that is by tending to its needs. We acknowledge the hard work and commitment that some offices and departments actively make to take care of our international student body. Research allowed us to study the statistics and numbers, while the interviews and focus groups allowed us to hear and learn from the experiences of others, to voice the needs of an important group on campus. Although we did not fully achieve our goal of developing a detailed program to encourage cross-cultural connections at WPI, we are confident that, with our groundwork in research and ideation, future efforts will successfully improve international students' well-being and help U.S. students in the development of important skills in intercultural competency.

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Appendix A

Preamble:

Dear WPI Student,

You are invited to participate in a study conducted by an IQP group investigating the Cross-Cultural Communication between international students and domestic students at WPI. Participation should take approximately 5 minutes to complete.

PARTICIPATION

Your participation in this survey is voluntary. You may refuse to take part in the research or exit the survey at any time. You may skip any question you do not wish to answer for any reason.

PROCEDURES TO BE FOLLOWED

You are asked to answer a survey and, optionally, participate in an interview. The survey should take about 5 minutes to complete. The optional interview will take about 40 minutes. Both will ask you questions about how you feel in relation to feelings of belonging at WPI. The online survey is anonymous and no identifying information about you will be gathered. We will use the data we collect from the survey in an anonymized way for our project report. If you agree to be interviewed, you will join a small team to respond to questions about your well-being and sense of inclusion on campus. The interview may be done in person or on Zoom. If you give us permission, we will record the audio of the interview (but no video) to use for reviewing and codifying the transcript, but your words will be anonymized in the report, and the recording will be destroyed after the data has been collected. If you do not give permission for recording the audio of the interview, we will not record the interview, but we will take notes. After reviewing and codifying our notes, your words will be anonymized in the report, and the notes will be destroyed.

CONFIDENTIALITY

Your responses will remain anonymous. No one will be able to identify you or your answers, and no one will know whether or not you participated in the study. At the end of the survey, you will be asked if you are interested in participating in an additional interview [by phone, in person, or by email]. If you choose to provide contact information such as your email address, your survey responses may no longer be anonymous to the researcher. However, no names or identifying information would be included in any publications or presentations based on these data, and your responses to this survey will remain confidential.

BENEFITS & RISKS

You will receive no direct benefits from participating in this research study. However, your responses may help us to support and enhance the overall well-being of international students. While this research includes some survey and interview questions of a personal nature regarding

your feelings, emotions and friendships, the probability of harm or discomfort anticipated in this research will not be greater than those ordinarily encountered in daily life.

CONTACT

If you have questions concerning the study, contact: gr-ccc-iqp@wpi.edu

Survey Questions for International Students:

1. Demographics:
 - a. Are you an undergraduate or graduate student at WPI? *(Multiple choice)*
 - i. Undergraduate
 - ii. Graduate
 - b. What is your expected year of graduation from WPI? *(Multiple choice)*
 - i. 2024
 - ii. 2025
 - iii. 2026
 - iv. 2027
 - v. 2028 or later
 - c. What is your home country/country of origin? _____ *(Open response)*
 - d. How many months or years have you been in the United States? _____ *(Open response)*
 - e. What is your gender identity? *(Multiple choice)*
 - i. Male
 - ii. Female
 - iii. Nonbinary
 - iv. Other: _____
2. In my home country/culture, when someone says they feel like they “belong” and are “included” in a community, that means they feel: _____ *(Open response)*
3. In your opinion, how important is it to have close friendships when it comes to a feeling of belonging and inclusion in a community? *(Likert scale)*
 - a. 1 - Very unimportant
 - b. 2 - Somewhat unimportant
 - c. 3 - Neither unimportant nor important

- d. 4 - Somewhat important
 - e. 5 - Very important
4. How much do you agree with the following statement: “I feel like I belong and am included in the community at WPI”? (*Likert scale*)
- a. 1 - Strongly disagree
 - b. 2 - Somewhat disagree
 - c. 3 - Neither agree nor disagree
 - d. 4 - Somewhat agree
 - e. 5 - Strongly agree
5. How often do you feel isolated, lonely, or disconnected on campus? (*Likert scale*)
- a. 1 - Very rarely
 - b. 2 - Rarely
 - c. 3 - Neither rarely nor often
 - d. 4 - Often
 - e. 5 - Very often
6. What are the biggest obstacles you have encountered in finding a sense of belonging and inclusion at WPI? You may choose more than one. (*Check all that apply*)
- a. Language barriers
 - b. Cultural barriers
 - c. Discrimination
 - d. Lack of people I feel comfortable with
 - e. Other: _____
7. How comfortable have you been with navigating the US culture on campus? (*Likert scale*)
- a. 1 - I have been very uncomfortable with navigating US culture.
 - b. 2 - I have been somewhat uncomfortable with navigating US culture.
 - c. 3 - I have been neither uncomfortable nor comfortable with navigating US culture.
 - d. 4 - I have been somewhat comfortable with navigating US culture.
 - e. 5 - I have been very comfortable with navigating US culture.
8. How successful have you been with navigating the US culture on campus? (*Likert scale*)

- a. 1 - I have been very unsuccessful with navigating US culture.
 - b. 2 - I have been somewhat unsuccessful with navigating US culture.
 - c. 3 - I have been neither unsuccessful nor successful with navigating US culture.
 - d. 4 - I have been somewhat successful with navigating US culture.
 - e. 5 - I have been very successful with navigating US culture.
9. How easy has it been for you to make friends with Americans at WPI? (*Likert scale*)
- a. 1 - Very difficult
 - b. 2 - Somewhat difficult
 - c. 3 - Neither difficulty nor easy
 - d. 4 - Somewhat easy
 - e. 5- Very easy, takes no additional effort
10. How many close friends do you have at WPI who are **NOT** Americans (US domestic students)? (*Multiple choice*)
- a. 4 or more friends
 - b. 3
 - c. 2
 - d. 1
 - e. None
11. How many close friends do you have at WPI who are Americans (US domestic students)? (*Multiple choice*)
- a. 4 or more friends
 - b. 3
 - c. 2
 - d. 1
 - e. None
12. How much do you agree with this statement: “Friendship” means something different to Americans than what it means to people in my home country/culture. (*Likert scale*)
- a. 1 - Strongly disagree
 - b. 2 - Somewhat disagree
 - c. 3 - Neither agree nor disagree
 - d. 4 - Somewhat agree

- e. 5 - Strongly agree
13. If you answered a., b., c. or d. to the previous question, please describe any differences you have noted in what Americans think about “friendship” versus people from your home country/culture: _____ (*Open response*)
14. What are some of the biggest challenges you face when trying to make friends with Americans (US domestic students) at WPI? (*Check all that apply*)
- a. Language barriers
 - b. Cultural barriers
 - c. Few opportunities to meet Americans
 - d. Lack of shared interests or similar activities
 - e. Fear of being discriminated
 - f. Different expectations of what it means to be “friends”
 - g. Other _____
15. How do you/did you make friendships with people here at WPI? _____ (*Open response*)
16. How interested would you be in making a connection with an American (US domestic) WPI student to share in a cross-cultural exchange by having conversations and doing activities together? (*Likert scale*)
- a. 1 - Very uninterested
 - b. 2 - Uninterested
 - c. 3 - Neither uninterested nor interested
 - d. 4 - Interested
 - e. 5 - Very interested

Survey Questions for U.S. Domestic Students:

1. Please answer these demographic questions, if you are willing:
- a. Are you an undergraduate or graduate student at WPI? (*Multiple choice*)
 - i. Undergraduate
 - ii. Graduate
 - b. What is your expected year of graduation or completion of degree from WPI? (*Multiple choice*)

- i. 2024
 - ii. 2025
 - iii. 2026
 - iv. 2027
 - v. 2028 or later
 - c. What is your gender identity? (*Multiple choice*)
 - i. Male
 - ii. Female
 - iii. Nonbinary
 - iv. Other: _____
- 2. Are you a member of any cultural/multicultural clubs or cultural/multicultural organizations on campus? (*Yes/No*)
 - a. Yes
 - b. No
- 2. What made you join the cultural club or organization? (*Check all that apply*)
 - a. Interested in culture
 - b. Want to learn a language
 - c. Wanted to meet someone from a culture different from my own
 - d. Looking for a sense of community and belonging
 - e. Other: _____
- 3. How satisfied are you with the cultural exchanges you experience at WPI? (*Likert scale*)
 - a. 1 - Very satisfied
 - b. 2 - Satisfied
 - c. 3 - Neutral
 - d. 4 - Dissatisfied
 - e. 5 - Very dissatisfied
- 4. Do you wish you had more cross-cultural encounters? (*Multiple choice*)
 - a. No
 - b. Not sure
 - c. Yes
- 5. How many friends do you have at WPI who are international students? (*Multiple choice*)

- a. 4 or more friends
 - b. 3
 - c. 2
 - d. 1
 - e. None
6. How easy has it been for you to make friends with international students at WPI? (*Likert scale*)
- a. 1 - Very difficult
 - b. 2 - Somewhat difficult
 - c. 3 - Neither difficulty nor easy
 - d. 4 - Somewhat easy
 - e. 5 - Very easy, takes no additional effort
7. What are some of the biggest challenges to making friends with international students at WPI? (*Check all that apply*)
- a. Language barriers
 - b. Cultural barriers
 - c. Few opportunities to meet international students
 - d. Lack of shared interests or similar activities
 - e. Fear of being discriminated
 - f. Different expectations of what it means to be “friends”
 - g. Other: _____
8. How important do you think it is to be skilled at intercultural communication?
(Intercultural communication is defined as communication with people from other cultures and backgrounds.) (*Likert scale*)
- a. 1 - Very unimportant
 - b. 2 - Somewhat unimportant
 - c. 3 - Neither unimportant nor important
 - d. 4 - Somewhat important
 - e. 5 - Very important

9. How high would you rank your intercultural competency? (Intercultural competency is the ability to live comfortably and work successfully with people from other cultures and backgrounds.) (*Likert scale*)
- 1 - Very low
 - 2 - Low
 - 3 - Neither low nor high
 - 4 - High
 - 5 - Very high
11. How important do you think it is to be interculturally competent? (*Likert scale*)
- 1 - Very unimportant
 - 2 - Somewhat unimportant
 - 3 - Neither unimportant nor important
 - 4 - Somewhat important
 - 5 - Very important
12. How interested would you be in making a connection with an international WPI student to share in a cross-cultural exchange by having conversations and doing activities together? (*Likert scale*)
- 1 - Not interested
 - 2 - Somewhat uninterested
 - 3 - Neither interested nor uninterested
 - 4 - Somewhat interested
 - 5 - Very interested

Appendix B

Informed Consent Agreement for Participation in Research Study

Investigators:

Professor Althea Danielski

Research Assistants:

Mahmoud Ahmed, Fernanda Cálix, Cierra O’Grady, Aritro Sarker

Contact Information:

Principle Investigator: Althea Danielski

Email: amdanielski@wpi.edu

Research Assistant: Cierra O’Grady

Email: cmogrady@wpi.edu

Research Assistant: Mahmoud Ahmed

Email: mahmed3@wpi.edu

Research Assistant: Aritro Sarker

Email: adsarker@wpi.edu

Research Assistant: Fernanda Cálix

Email: fmcalix@wpi.edu

Title of Research Study: Cross-Cultural Connections

Sponsor: IQP Global Projects

Introduction:

You are being asked to participate in a research study. Before you agree, you must be fully informed about the purpose of the study, the procedures to be followed, and any benefits, risks, or discomfort that you may experience as a result of your participation. This form presents information about the study so that you may make a fully informed decision regarding your participation.

Purpose of the Study:

The goal of this study is to analyze and improve the experience of international students of all levels at WPI, specifically focusing on mental health and well-being. The information we collect will be compared to national data and the best practices in place in peer institutions. We will then apply this information to formulate recommendations for WPI and create a plan to improve the mental health and well-being of international students on campus.

Your participation in this research is voluntary.

Your refusal to participate in the focus group will not result in any penalty to you or any loss of benefits to which you may otherwise be entitled. You may decide to stop participating in the

research at any time without penalty or loss of other benefits. The project investigators retain the right to cancel or postpone the experimental procedures at any time they see fit.

Procedures to be followed:

Focus Group:

A focus group is a guided discussion facilitated by researchers to learn about the participants' opinions, feelings and experiences regarding a particular topic.

In our focus group, we will gather in a private space with 2-5 participants and 2 student researchers who will lead the discussion for around 40 minutes about the participants' experiences as international students at WPI with their mental health, well-being, and feelings of belonging and inclusion on campus. To create a safe and non-judgmental environment, we ask everyone in the focus group to keep the conversations confidential and not share anyone's responses with anyone else outside of the room.

Your participation is completely voluntary. At any point, you can decline to answer a question and/or leave the group with no penalty. You are free to decide when to speak and what to say.

At the end of the focus group session, we will provide you with a list of resources and support services that you can use if the discussion has prompted you to feel concerned for your wellbeing or the wellbeing of others.

With permission from all participants, we will record only audio during the focus group (no video). The recording will only be used internally for transcribing and reviewing data, and everyone remains anonymous. Furthermore, the recording will be permanently destroyed after the study is complete. If you do not permit us to record audio during the focus group, you might be asked if you are willing to participate in a separate interview with a single researcher who will take written notes instead. After reviewing all the information collected, your identity will remain completely anonymous in our reports and recommendations.

Risk to Study Participants:

There are no significant risks to participating in this study. Some questions might provoke deep feelings or thoughts about personal nature, relationships, or mental health; however, the

probability of harm or discomfort will not be greater than those ordinarily encountered in daily life.

Benefits to Research Participants and Others:

There are no direct benefits to participants in this study. However, the goal of this study is to improve the mental health and well-being experience at WPI for current and future international students.

Record Keeping and Confidentiality:

All data collected remains completely anonymous. Outside of focus group, no one will be able to identify you or your answers, and no one will know if you participated in the study. We will assign a random number to each participant and refer to them by the number instead of names. Any quotes included in our report or other publications will not show names or identifying information.

The only ones able to inspect data from this study, without any identification, are the study investigators, the sponsor or its designee, and, under certain circumstances, the WPI Institutional Review Board (IRB).

Your Rights:

For more information about this research or about the rights of research participants, or in case of research-related injury you may contact one any of the investigators listed on the first page.

Alternatively, feel free to contact:

- Institutional Review Board (IRB) Manager: Ruth McKeogh
Tel. 508 831-6699
Email: irb@wpi.edu
- Human Protection Administrator: Gabriel Johnson
Tel. 508 831-4989
Email: gjohnson@wpi.edu

You do not give up any of your legal rights by signing this statement.

By signing below, you acknowledge that you have been informed about and consent to be a participant in this study. Make sure that your questions are answered to your satisfaction before signing. You are entitled to retain a copy of this consent agreement.

Focus Group Questions for International Students:

1. Do you identify as an international student?
2. What are some of the ways in which your social life here at WPI differs from back home?
3. What are some of your top social and cultural concerns?
4. What has been most challenging about navigating and adjusting to U.S. culture on campus?
5. How much do you struggle in balancing social and academic life?
6. If you have felt lonely sometimes since you came to WPI, how have you generally coped with those feelings?
7. To what extent have school resources helped you in coping when struggling to find friends and a sense of belonging?
8. How much do you feel the faculty and staff care about your mental health and well-being?
9. If you need help with something, whether it has to do with academics or personal life, where do you go?
10. If you have American friends How well do you think “get you”/ “understand you” and appreciate what you are going through as an international student on campus?
11. What was your biggest fear upon coming to WPI and how have you dealt with it?
12. What could WPI do to improve your well-being, as well as your social and academic adjustment?
13. Would an app that connects international students with U.S. students to form cross-cultural connections be beneficial? Would you use an app like this? What features would you like it to have?
14. How interculturally competent do you believe domestic U.S. students here at WPI are?
15. Final comments

Focus Group Questions for U.S. Domestic Students:

1. Do you identify as an international student?
2. Do you think intercultural competency is an important skill to have?
3. How many friends do you have who are international students at WPI?
4. Are you content with the intercultural exchanges that you get at WPI?
5. What are the main obstacles to forming intercultural connections at WPI?
6. Have you completed your IQP yet? Abroad or in the U.S.?
7. How ready do you feel to work, collaborate, and live with people from different cultural backgrounds?
8. Could WPI better prepare students for going abroad on their IQPs?
9. How interculturally competent would you say you are? What about domestic U.S. students at WPI in general?
10. Do you think the concept of friendship in the U.S. differs from other cultures?
11. How interested are you in connecting with an international student?
12. Would an app that connects international students with U.S. students to form cross-cultural connections be beneficial? Would you use an app like this? What features would you like it to have?
13. What could help make connections between international students and U.S. students?
14. What do you think of the pilot program that was run in which international Chinese students were paired with U.S. students learning Chinese?
15. Would the digital badge idea motivate U.S. students to participate in a program like this?
16. Final comments

Appendix C

Interview Questions for WPI Faculty

1. What are some common challenges international students at WPI face when adjusting to life in the United States, particularly in terms of mental health and cultural adaptation?
2. In your experience, what support systems or programs have been most effective in addressing the needs of international students at WPI? Are there any gaps or areas for improvement that you've identified?
3. How do international students currently interact with domestic U.S. students at WPI? Are there existing initiatives or opportunities for cross-cultural interaction, and if so, how effective have they been?
4. Have you received any feedback from international students regarding their experiences with cultural adaptation, social integration, and mental well-being? What are some common themes or concerns that emerge from these conversations?
5. Based on your observations and interactions with international students, what recommendations do you have for enhancing the well-being and connectedness of both international and domestic students at WPI?
6. How do you envision technology being used to facilitate cross-cultural connections between international and domestic students? Are there specific features or functionalities that you believe would be particularly beneficial?
7. Who do you think would be best suited to oversee and maintain the proposed program for connecting international and domestic students? Are there existing resources or personnel at WPI that could take on this responsibility?
8. What efforts, if any, are currently being made to enhance the cultural competency of domestic U.S. students at WPI? How might these efforts be expanded or improved to promote greater understanding and inclusivity within the student community?
9. Are there opportunities for collaboration with other departments or organizations at WPI to support the goals of the proposed program? How might partnerships enhance its effectiveness and reach?

10. In your opinion, how might the successful implementation of this program contribute to the overall well-being and academic success of international students at WPI, as well as the campus community as a whole?

Interview Questions for Peer Universities

1. What is a unique way in which your school/office helps international students with adjustment barriers?
2. How does the institution measure how the international student body is doing?
3. How does your school strive to create a diversity of cultural, culinary, and entertainment options?
4. What do you think makes your school's international student support network unique?
5. What is your school doing to help their international students feel like they are interculturally competent and can make connections with U.S. students?
6. What is your experience with international students' mental health?

Appendix D

Peer Universities Research Questions

1. Is there an international house/international student office and is there a physical space?
2. Is there a variety of multicultural clubs and organizations?
3. How big is the international student community? What percentage of the student body are international students?
4. How many staff members are appointed to work with international students?
5. Is there an international student orientation program?
6. Is there a peer mentorship program for incoming international students?
7. What type of advising is offered for students (e.g. academic, wellness-related, health)?
8. Are there any existing programs to enhance international student life and connection?
9. Is there a mental health/counseling center?
10. Does the counseling center have someone who specializes in international students?

Appendix E

Database Schema for Web App

Underlined items represent primary keys. “FK” stands for “foreign key.”

- User
 - uName varchar2(80)
 - pronouns varchar2(25)
 - uEmail varchar2(25)
 - isInternational number(1)
 - classYear number(4)
 - gender varchar2(9)
 - countryOfOrigin varchar2(25)
 - isUndergrad number(1)
 - bio varchar2(300)
 - profileImage BLOB
 - IQPLocation varchar2(25)
 - interestedInGroup number(1)
- Interests
 - interestID number(6)
 - interestName varchar(25)
- UserInterests
 - uEmail varchar2(25) FK
 - interestID number(6) FK
- Languages
 - language varchar2(25)
- UserLanguages
 - uEmail varchar2(25) FK
 - language varchar2(25) FK
- Matches
 - uEmail1 varchar2(25) FK
 - uEmail2 varchar2(25) FK

- Chat¹
 - uEmail varchar2(25) FK
 - chatID number(6)
- Messages
 - senderEmail varchar2(25) FK
 - chatID number(6) FK
 - time timestamp
 - message varchar2(1000)
- Events
 - eventID number(6)
 - eventName varchar2(70)
 - date timestamp
 - description varchar2(100)
- EventTags²
 - eventID number(6) FK
 - interestID number(6) FK
- ConversationStarters
 - convID number(6)
 - prompt varchar(255)
- SeenConversationStarters³
 - chatID number(6) FK
 - convID number(6) FK

¹ There is only one email per row because chats need to be able to support an arbitrary number of people in the case of group chats. Thus, for every chat someone is in, their name is listed here with the chat ID. This allows you to select every user who is paired with one chat ID to get all the users in a given chat.

² These are tags/categories for the events. Associating events with user interests will allow the app to recommend specific events to each user.

³ This table keeps track of which conversation starters each chat has already seen so that the same ones are not shown multiple times.