Robust Rabat

Identifying New Project Center Opportunities and Strengthening Existing Relationships

An Interactive Qualifying Project (IQP) submitted to the faculty of

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Submitted By:

Alex Abrahamsen

Amin Badmos

Aseel Kambal

Luca Makarushka-Napp

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Project Advisors

Dr. Michele Femc-Bagwell and Dr. Mallory Bagwell

Project Sponsor

Dr. Kent Rissmiller

Abstract

Recent leadership changes at the Rabat Project Center (RPC) have led to a transitional phase within the site, resulting in instability. In response, the research team initiated efforts to enhance project opportunities and strengthen center relationships. Using a mixed methodology—interviews, surveys, and a standardized rubric—a thorough analysis of the program and project development approaches was conducted. This research led to the creation of six projects across four sponsors for the upcoming 2025 RPC cohort. Furthermore, program weaknesses were identified, along with recommendations for improvement.

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Executive Summary

Introduction & Background

Over the past 24 years, students have journeyed to Rabat, Morocco, for their Interactive Qualifying Project (IQP) experience, seeking cultural immersion and engaging projects. However, recent transitions in leadership and projects suggest a troubling trend towards project uniformity, potentially diminishing student engagement and sponsor satisfaction. To address this, a comprehensive reevaluation of the Rabat Project Center's (RPC) trajectory is imperative to revitalize its appeal to students and sponsors.

Exploring the RPC's history reveals diverse projects, ranging from sustainable development initiatives to educational endeavors, that have left lasting impacts on local communities and students. However, concerns arise over the creeping uniformity of projects, indicating a need for rebalancing of the RPC's project landscape. Delving into Morocco's historical context uncovers crucial insights for contextualizing project initiatives. From colonial legacies to contemporary challenges like water scarcity and multilingual education, understanding Morocco's socio-political fabric is essential for effective interventions.

Rabat's pressing needs, particularly in education and sustainable development, underscore the RPC's potential for impactful interventions. Addressing educational disparities and aligning projects with the United Nations Sustainable Development Goals (SDGs) are important priorities. Strategic partnerships with key organizations like École Marocaine des Sciences de l'Ingénieur (EMSI), Au Grain de Sésame, and Université Internationale de Rabat (UIR) enhance the RPC's potential for sustainable impact, championing initiatives ranging from empowering women through art to advancing sustainable development solutions.

Leveraging historical insights, cultural context, and strategic alliances lays the groundwork for revitalizing the RPC's mission. Embracing project diversity, fostering stronger sponsor relationships, and aligning initiatives with local needs and global SDGs are crucial steps toward sustaining transformative IQP experiences in Morocco.

Methodology

The project research team (PRT) utilized a mixed methodology, including surveys and interviews with WPI faculty and potential sponsors. The first method was interviews with WPI faculty; this was significant because it enabled the team to obtain valuable insights from previous directors and advisors, providing guidance on the project approach and offering rich cultural and historical knowledge about Rabat. Additionally, a survey was created for WPI students to share what types of projects are most desired and what they find most important in an IQP.

Upon arriving in Rabat, a sponsor rubric was developed to evaluate potential sponsors' suitability for sponsoring an IQP. Key elements in this rubric included sponsor enthusiasm, responsiveness, and the alignment of proposed projects with WPI’s missions. After identifying specific organizations, interviews were conducted to grasp their scope and potential project avenues. During the interviews, snowball sampling was utilized to determine if potential sponsors had additional connections with which the team could network. After the interviews concluded, the PRT and potential sponsor would work together to develop project details using a project outline template. This template helped streamline and standardize the projects and kept the team and potential sponsors on the same page during project development.

Findings

Faculty interviews describe the ideal IQP as a project integrating science and culture over 14 weeks, focusing on appropriate real-world applications within cultural contexts. Faculty

emphasized students' understanding of social implications through projects that are at the intersection of society and technology– skills that are vital for future careers. This finding informed the creation of the sponsor rubric, where potential projects are graded on this aspect. Additionally, through these interviews, characteristics such as sponsor availability, communication, and enthusiasm were identified as essential for a supportive relationship.

Unfortunately, the RPC has faced turnover among advisors and directors, with faculty reluctance to take on directorship roles. This trend has been due to a feeling amongst many faculty that there is a lack of tenure and promotion opportunities and non-competitive compensation. This opinion has caused experienced faculty with the RPC not to be motivated to continue working with the center. Recruiting and supporting instructors with IQP experience is crucial for student preparation and maintaining faculty engagement.

Demographic questions provide crucial context for respondents' answers. 90.2% of respondents were sophomores or older, indicating some IQP experience. Additionally, 63.8% had completed their IQP, offering valuable insights. Freshmen's responses represent expectations of the IQP.

The trends discussed are based on all respondents for a representative analysis. In theory, the IQP focuses more on the project than the location. However, respondents prioritize location over projects when selecting their IQP. Site importance averaged 4.3 out of 5, while project importance averaged 3.6. Despite limited information on location-specific projects, students still value this information.

Environmental projects ranked highest (average score: 4.1), followed by public spaces (3.8) and technical projects (3.7). However, technical projects showed the most polarization,

with 38% ranking them as most interesting and 28% as least interesting, revealing potential polarization within project teams.

One of the initial interviews with a potential sponsor highlighted the significance of UN Sustainable Development Goals (SDGs) in Morocco, shaping the framework for potential projects. Subsequent research and interviews with UIR underscored the broad integration of SDGs in Moroccan education and project initiatives, showcasing their impact across various sectors.

The team faced a significant challenge in ensuring potential sponsors understood the IQP process and objectives. Misunderstandings with sponsors prompted the team to develop more explicit communication strategies to effectively align expectations and project timelines. Language barriers added complexity to this effort but were overcome to facilitate productive discussions with sponsors.

The Sponsor Rubric facilitated the conversion of qualitative observations from sponsor interviews into quantitative data, enabling the assessment of sponsor and project compatibility. The criteria were inspired by a mixture of faculty comments, the research team's observations, and subsequent conversations with sponsors.

Data revealed that potential sponsors generally scored higher than current sponsors across all categories. The most significant differences were observed in the Intersection Between Society and Technology, Project Compatibility, Sponsor Timeliness and Responsiveness, and Location Accessibility criteria.

Additionally, sponsors affiliated with engineering institutions tended to score higher in the Project Intersection Between Society and Technology criteria. Conversely, sponsors with school affiliations were perceived as less unique, with some projects lacking originality despite

their alignment with societal and technical aspects. These insights highlight the importance of considering sponsor characteristics beyond project alignment to ensure meaningful partnerships in IQP initiatives.

Discussion & Recommendations

Conversations with past RPC faculty revealed a gap between advertised and actual IQP experiences. Transitioning directors can disrupt sponsor connections, impacting student guidance and preparedness for addressing international issues. The absence of existing long-term RPC staff limited the PRT's findings. To enhance the RPC's network and support incoming faculty, the PRT recommends hiring advisors, instructors, and directors with experience in Morocco, as well as facilitating discussions between new and existing faculty to share knowledge and providing comprehensive training on the RPC and Morocco through workshops or educational programs offered by Global Experience Office (GEO). These measures aim to ensure the RPC's effectiveness and sustainability and support future student cohorts' success.

The PRT identified several areas for improvement in the IQP process, particularly regarding location selection and project information available to students. Students prioritize location over project offerings due to a lack of comprehensive information available. To address this, the team recommends making detailed project descriptions readily available to students before they rank their location preferences. This goal can be achieved by finalizing projects and sponsors well in advance, similar to the successful timeline demonstrated by the PRT. Additionally, the PRT suggests enhancing the project information available to students on the WPI eProjects website by identifying trends in project focus across locations. The key issue identified is a lack of accurate and timely information and preparation, leading to less successful

projects and a less fulfilling IQP experience. Implementing the PRT's recommendations can help address these issues and improve the overall student experience in the IQP program.

The sponsor selection process relied heavily on Professor El-Korchi's network, with snowball sampling methods yielding limited success in identifying potential sponsors. Cold emailing was ineffective in Rabat, highlighting the importance of organizational relationships over interpersonal connections. Misunderstandings about the IQP concept were common among sponsors, consuming valuable time that could have been spent developing projects. Time constraints posed a significant limitation, as the team felt rushed to build relationships and ensure project quality within a short timeframe. The small sample size of sponsors further constrained the selection process. Recommendations for supporting future RPC directors include appointing someone familiar with Rabat, emphasizing the transition of personal relationships into organizational ones, and creating informative materials for sponsors about the IQP process and their roles. These measures aim to streamline sponsor selection and facilitate meaningful project development in the future.

Following the selection of sponsors, the PRT connected with four sponsors and developed six projects for the 2025 RPC cohort. The team was able to develop two projects with École Marocaine des Sciences de l'Ingénieur (EMSI). The first project aims to analyze an engineering curriculum at EMSI and integrate sustainable development goals into it. The second project is an augmented reality museum that aims to capture key cultural and historical aspects of Rabat. The team also developed two projects with the International University of Rabat (UIR). The first project is developing computational thinking through educational robotics within a K-12 public school; this is the only recurring project with this sponsor. The next project with UIR is analyzing water management in Agriculture, which includes water management methods, costs,

and sustainability. The next project is sponsored by Au Grain de Sesame, which will involve developing a website and improving the manufacturing systems of a solo-run business. The last project is sponsored by Mohammed VI University, which will analyze and develop the English curriculum present in the university and incorporate the use of film.

Conclusion

The PRT created a strong foundation for the future of the Rabat Project Center. A site director will be needed to strengthen the existing relationships developed over the course of the project and previous cohorts. The relationships created with sponsors will form into organizational ones in which the projects will build off each other and become stronger and more impactful every year. The team went above and beyond their goal and created six meaningful and detailed projects to hand off to directorship for the 2025 cohort.

Authorship

Section	Primary Author(s)	Primary Editor(s)
Abstract	Alex Abrahamsen	Amin Badmos
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1.0 Introduction

For the past 24 years, students have traveled internationally to Rabat, Morocco, for their Interactive Qualifying Project (IQP) experience. Some travel to Rabat hoping for cultural immersion, others to find new locations to visit. However, what unites every student during IQP is the seven-week project experience. Despite the many changes over the last two decades, the project experience has remained constant throughout the Rabat Project Center's (RPC) existence. In the past 24 years, the RPC has experienced many transitions, including multiple directors and advisors. As a result, there is an inconsistent relationship between the center and its sponsors and a significant and potentially harmful lack of project diversity. Option deficiency can lead to less engaging projects, disinterested students, and a less meaningful experience for all those involved.

This IQP aims to alter the trajectory of the RPC towards a more robust and engaging opportunity for both students and sponsors. When looking at previous IQPs from 2012 to 2020, projects addressed issues ranging from environmentalism, farmer advocacy, water management, education, sustainability, and others. In 2024, four of the six offered projects addressed an educational need, and three of those projects had the same sponsor. An abundance of qualified choices leads to competition, driving growth and improvement and leading to more satisfied consumers, in this case, the students and sponsors. The change from diverse to uniform projects demands attention if the robustness of the RPC is to be showcased to its fullest potential. Within this project, we intend to assess the history of the project center and identify the criteria required to recruit new, unique, and qualified sponsors to supply projects to the RPC. This paper discusses the history and context of Morocco and their effect on the sponsor search process, identifies the methodology that will be used to gather information from previous RPC affiliates, proposes questions to sponsors interested in working in the center, and identifies new projects.

2.0 Background

Preliminary information is needed to understand the topics the research paper addresses fully. The background section provides context for involved organizations, utilized methodology, and other relevant information. This section begins with a brief overview of the Interactive Qualifying Project (IQP) and the history of the Rabat Project Center (RPC). Next, important and relevant details about the culture and history of Rabat and the people who live there are highlighted. Finally, the areas of interest and organizations that drive the project's focus are introduced.

2.1 What is the Interactive Qualifying Project?

The WPI Plan, established in 1970, was implemented to turn WPI students into "technical humanists" (Cohen, 1977). This label means that students would leave WPI with the ability to apply their technological skills in more ways than a traditional engineer could. Students would have the ability to aid the world around them. The WPI Plan connected the institution's technological aspects with society's social component. These skills would be acquired through three-degree requirements: the Humanity and Arts requirement, the Interdisciplinary Qualifying Project (IQP), and the Major Qualifying Requirement (MQP). The Humanity and Arts requirement is a six-course series where students can immerse themselves in a language or choose breadth-and-depth components in topics like writing, history, and global studies. Students typically finish this requirement in the second year of their undergraduate studies. The IQP is typically a service learning research project with a team of three to four students. The MQP, undertaken in a student's fourth year at WPI, accumulates all the knowledge learned in the past four years into a project that addresses a problem in their field of study.

The IQP is typically undertaken in the third year by teams of three to four students, aiming to explore how science and technology interact with societal structures and values. It often involves off-site projects, with students placed in diverse teams to encourage a broad perspective on problem-solving. About 60% of students choose from over 50 international project centers worldwide, while the rest opt for domestic projects with local sponsors (Elmes & Loiacono, 2009). The final assignment of each student's IQP site is based on a preference form they submit during their second year. The IQP process begins with faculty-led project selection involving discussions with potential sponsors, usually government agencies or non-profits. The selected projects should present a substantial challenge, bridging the gap between technology and society and requiring evidence-based research. Off-site projects entail a seven-week planning phase with a preparation course focusing on problem framing, background research, and methodology. Instructors and advisors grade a final presentation and proposal. Upon sponsor approval, teams move to the data collection phase using quantitative and qualitative methodologies. Weekly meetings ensure progress alignment. Data analysis involves both surveys and interviews. Students conclude with a final presentation to sponsors and advisors, addressing their research questions. Successful project completion leads to faculty approval and a final grade, enhancing social science methods, problem-solving, and adaptability. The IQP program benefits students, faculty, and the sponsor's organization, fostering practical solutions to real-world problems.

With the establishment of the WPI Plan, the IQP had six objectives: creating awareness of the connection between society and technology, teaching students how to identify those connections, fostering a habit of questioning social values and structures, developing and integrating analytical and evaluative skills, offering methods for assessing the impact of

technology, and lastly promoting the formulation of policy recommendations (Cohen, 1977). The same objectives established over 50 years ago are still in place today.

2.2 Rabat Project Center

The RPC was established in 2000. Initially, projects were completed in Ifrane at Al Akhawayn University, but they are now completed by different organizations scattered around the Rabat community. DigitalWPI, WPI's digital archive for projects, shows that this center has had a broad range of projects, from developing sustainable hammams (bath houses) to developing a mentorship program between a university and an orphanage. Additionally, there is a clear theme throughout these past projects of sustainability and education. The review of past projects serves as a baseline for similar projects that can be conducted in the future.

2.3 History and Background of Rabat and Morocco

Morocco was colonized by the French from 1912 to 1956. The intention of the colonizers at the time of occupation was to secure social control over Morocco. This goal was achieved through 'indirect rule,' where colonial authority would work with native Moroccan elites (Gagliardi, 2020). Where the previous monarchy was not able to exact control over the native tribes, the French employed a laissez-faire style of ruling, where they allowed them to have almost total jurisdiction over themselves (Gagliardi, 2020). As a result, the relationship between the French and native warlords was peaceful. However, this seemed almost to backfire as the people living beneath these warlords experienced an 'iron-fist ruling' that caused resentment towards the French due to their lack of action (Gagliardi, 2020).

The French also keened towards the social and economic divide. These divisions can be seen in the school system, separated by socio-economic status. Some schools, designed for those who were upper-class and privileged, taught primarily French and had economic and financial

barriers that prevented those of lower classes from entering the institutions. Schools for the common people of Morocco taught primarily Arabic, while schools for natives taught Amazigh and omitted Arabic from their studies (Gagliardi, 2020). The language discrepancy only deepened the divide between the peoples of Morocco and caused the elite to remain loyal to the French. In contrast, the 'others' of Morocco were left with language barriers and differences in ruling (Gagliardi, 2020).

Although occurring almost 70 years ago, the effects of this ruling style can still be seen in modern-day Morocco. Private schools with stellar education are typically too expensive for the average Moroccan citizen to attend and are almost always offered exclusively in French (Gagliardi, 2020). Meanwhile, public schools are left underfunded and under-equipped, with many not even having sufficient funding for libraries on their campuses. This inequality is notable for the scope of the project because socio-economic status plays a significant role in influencing the lives of Moroccans. Institutions and sponsors that lean more towards French and their style will typically be upper-class, while those that favor Arabic are likely more accessible to the general urban public.

Morocco eventually gained independence in 1956 due to the rise of the urban, elite-based Independence Party, which saw the monarchy as a symbol of unity (Gagliardi, 2020). The soon-to-be-king tightened relations with native tribes and peoples, placing himself as a strategic mediator and trustful leader. The combination of this party's formation and nationwide distress due to French taxes, corruption, and other causes created social unrest. The mobilization of this party allowed for the formation of riots and social and political protests (Gagliardi, 2020). Though a fight for control occurred between groups– the Sultanate, French, Independent Party, and others–the Sultanate ultimately emerged on top, with the change from Sultan to King being

apparent with the formation of a new, conservative national framework that is present in modern-day Morocco (Gagliardi, 2020).

The monarchy reigned from 1956 until 2011, when the Arab Spring happened. The Arab Spring can be characterized by protests that emerged throughout Morocco (Kalpakian, 2013). The greatest sources of protestors rose from urban areas, where the citizens wanted political reform and more participation (Kalpakian, 2013). Meanwhile, citizens in rural areas of Morocco desired access to basic infrastructure and economic well-being (Kalpakian, 2013). The native Amazigh people also had differing issues, wanting more respect in the form of official language recognition (Bergh & Rosi-Doria, 2015). These separate objectives of varying peoples caused the movement to be disjointed and ununified (Bergh & Rosi-Doria, 2015). The Arab Spring occurred in Morocco and throughout the Middle East and North Africa (Kalpakian, 2013). Some resulted in successfully overthrowing the monarchy and instating other forms of government (Kalpakian, 2013). The Moroccan monarchy swiftly enacted a Constitution to quell the protests from becoming this type of revolt (Bergh, 2015). However, none of the protestors were involved in this process, leaving the 'new' Constitutional Monarchy with weak provisions limiting monarchy power and wrapping up the Arab Spring protests in Morocco (Bergh & Rosi-Doria, 2015).

The Arab Spring holds significant importance to the project as a whole. It provides context to uneasy feelings that Moroccans may have towards the government and outsiders. It also highlights the differences in feelings between urban and rural Moroccans (Bergh & Rosi-Doria, 2015). While rural Moroccans were fighting for more access to basic infrastructure (electricity, water, and mobility), urban Moroccans were fighting for more political freedoms (Bergh & Rosi-Doria, 2015). When working with sponsors from rural or urban areas, it is

essential to remember these values as they come up while developing new projects, which should further the IQP's goal of addressing the gap between technology and society.

2.4 Areas of Interest in Rabat

It is vital to have a general understanding of Rabat's needs to determine what sectors potential projects could address. The PRT can increase the RPC's impact on the surrounding area by aligning projects to Rabat's needs and applying projects in those areas.

2.4.1 Education

Many previous and current projects in the RPC relate to an aspect of education in Morocco. This focus is reasonable as the Moroccan education system faces significant challenges. Some of these challenges include a high dropout rate and low middle to high school retention rate, as only 53% of students continue to high school, and fewer than 15% of first-grade students will graduate from high school (Education | Morocco | Archive - U.S. Agency for International Development, 2019). Another challenge the Moroccan education system faces is multilingualism. Many families speak native Berber languages or even French, while many classes are taught in standard Arabic, which poses an immediate disadvantage to these students. The issue of multilingualism has led to low literacy rates in Moroccan schools (Education | Morocco | Archive - U.S. Agency for International Development, 2019). Additionally, many schools face challenges within the school structure itself as there is a need for more teachers and professors, and the curriculum in most schools is not fully developed.

2.4.2 United Nations Sustainable Development Goals

In 1992, the United Nations met at the Earth Summit to create "a comprehensive plan of action to build a global partnership for sustainable development to improve human lives and protect the environment" (United Nations, 2019). From this meeting and subsequent discussions

that spanned years, the United Nations solidified 17 Sustainable Development Goals (SDGs) in 2015(Sustainable Development Goals | The United Nations in Morocco). Then, national leaders created a plan of action to be implemented by 2030 (United Nations, 2019). The Division for Sustainable Development Goals in the United Nations Department of Economic and Social Affairs monitors progress. It provides support to nations around the world in areas related to the SDGs. Africa, and therefore Morocco, is a key focus in the current effort to achieve the SDGs (United Nations, 2019). While notable progress has been made in the last 15 years, many development goals remain off track. (Africa | Department of Economic and Social Affairs, 2015).

Morocco's sustainability priorities include three main issues. The first involves water scarcity and droughts; there has been an increasing scarcity of drinking water since the early 1960's. Second, floods contribute to about $450 million in damages every year. Floods are a considerable issue in Morocco's overall economy. Many farmers live in high-risk areas, and flooding can destroy their work. Morocco's final priority is to work towards zero net emissions by 2050. The Country Climate and Development Report has five principles in order to mitigate and eliminate these issues: adopt a whole government approach, protect the most vulnerable groups, establish a robust system of climate innovation, unleash innovation, and engage relevant stakeholders.

2.5 Organizations in Rabat

Identifying target areas based on historical and current needs assessments was essential for identifying potential sponsors and projects. The specific organizations and sponsors that the research team targeted for this project contribute to sustainable development goals, including, but

not limited to, sustainable cities and communities, equal rights, peace, justice, and strong institutions.

2.5.1 École Marocaine des Sciences de l'Ingénieur (EMSI)

École Marocaine des Sciences de l'Ingénieur (EMSI), or in English, the Moroccan School of Engineering and Sciences, was founded in 1986 and has 18 campuses spread throughout Morocco, mainly in Casablanca, Rabat, and Marrakech. They offer five engineering degrees in Computer and Network Engineering, Civil Engineering/Building and Public Works, Financial Engineering and Auditing, Industrial Engineering, and Automation Engineering/Industrial Computer Science. EMSI values student life, academic excellence, and being able to directly use one's studies in a real-world environment in order to make a difference. (École Marocaine Des Sciences de l'Ingénieur – EMSI, 2020)

EMSI is owned by a company called Honoris United Universities, which was established in 2017. Honoris, Africa's largest higher education organization, has a platform for many top African institutions. Honoris oversees 16 private institutions that focus on studies in numerous fields, including but not limited to engineering, medicine, arts, and business. Honoris is very focused on SDG application in their goals and coursework. Their main goal is to transform higher education in Africa and reshape education to focus on relevant and applicable coursework that will prepare students for the real world. In addition, students can use what they learned to contribute to SDG goals that will help grow their community. Honoris has six core pillars that help shape its institution: quality of learning, employability, innovation, communities, sustainability, and network. They have also extensively researched Adaptive Learning Systems (ALS), which use AI to mend a student's learning. This approach is done by giving more complex questions as the student gets them right, or vice versa.

The head professor in coordinating the EMSI projects has various experiences in education and government in Morocco and has held many roles in various organizations and institutions, including The Ministry of General Affairs and Governance in Morocco, King Mohammed the V University, Institute of Electrical and Electronics Engineers, Abdelmalek Essaadi University, and EMSI. The professor previously sponsored an IQP in 2019, which focused on launching smart city initiatives in Rabat. The project's main goal was to better connect the institutions within Madinat Al Irfane to the rest of Rabat. The team utilized surveys, focus groups, and interviews to help better understand the current effectiveness of the four main groups of smart city initiatives: sustainability, government, education, and economy. (Stahl et al., 2019)

2.5.2 Au Grain de Sésame

Au Grain de Sésame is a social enterprise founded by Moroccan artist Asmaa Benachir in Rabat, Morocco. Founded in December 2007, this organization focused on art within the framework of sustainable development and environmental preservation. With a vision to empower women through art and cultural exchange, Au Grain de Sésame has received numerous awards, such as the Seed Prize from the United Nations Environment Initiative in 2013, and was named the first laureate of the Museum Connect Award, organized by the American Alliance of Museums and

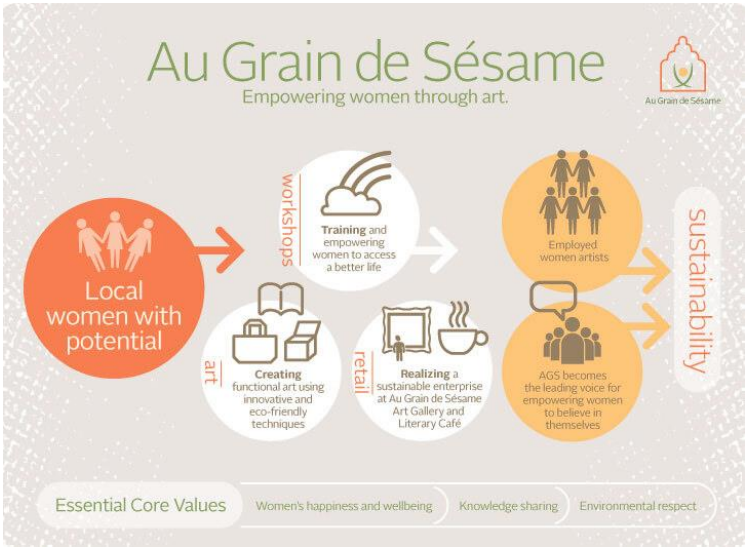


Figure 1: Au Grain de Sésame Essential Core Values

supported by the US State Department, Bureau of Cooperation and cultural affairs (Au Grain de Sésame, n.d).

Figure 1 shows how Au Grain de Sésame remains dedicated to enhancing socio-economic conditions by fostering artistic education, cultural exchange, and ecological awareness, seeking partnerships for sustainable development initiatives locally and internationally. The organization trains local women in traditional medinas to create sustainable and beautiful art pieces utilizing environmentally friendly techniques. Techniques involve utilizing recyclable materials like paper that can be made into stools and bags or plant fibers that can be spun into cloth. These sustainable art pieces are then sold in a gallery, with 30% of the resulting profits returning to the women who created them (Asmaa Benachir, March 28th, 2024). This system sustains these women's livelihoods and empowers them with valuable, sustainable artistry skills they will carry throughout their lives.

2.5.3 Université Internationale de Rabat

The International University of Rabat (UIR) was founded in 2010 and was the first university to be created in partnership with the Moroccan government (Université Internationale de Rabat, n.d). UIR aims to prepare its students to make a significant impact on the world by utilizing multidisciplinary learning, laboratory experience, and cutting-edge training and research. UIR has numerous departments, including colleges of business, social science, engineering and architecture, health sciences, doctoral studies, and executive education. The values of UIR include respect, citizenship, innovation, and excellence. These values contribute to the overall success, well-being, and flourishment of the UIR community. UIR heavily focuses on SDGs, as evidenced in the campus and its resources. An extensive system of solar panels and windmills contributes to the school's green energy. UIR also implements the UN SDG goals in

every building and its curriculum. In addition to all these direct impacts, they utilize a solar-powered desalination prototype to contribute to future clean drinking water research.

UIR has been sponsoring IQP projects for WPI since 2021. Most projects relate to the effects and perceptions of new technology, including electric-powered vehicles, virtual reality, robotics, and generative AI, on the education system and the overall Rabat community.

2.5.4 Mohammed VI Institute for Quranic Readings and Studies

The English program within the Mohammed VI Institute focuses on simultaneously teaching the Quran and Islamic studies with English. The current curriculum aims to engage the students in meaningful conversations to give the students a more significant learning experience. The curriculum comprises seven units: reading, listening, vocabulary, grammar, communication, writing, and unit tips. The unit tip section had the professor engage the students in activities that they believed would benefit the student's English learning. The curriculum starts small with simple vocabulary, motions, verbs, and the alphabet, providing students with a foundation to build upon their learning. The curriculum broadens into more advanced topics as the students continue the course. This program is still being developed and has a lot of room for improvement and new implementations.

2.5.5 Association Anoual

Association Anoua, a Moroccan-based NGO, was founded in 2005 (Association Anoual, n.d). It aims to create impactful projects in Morocco to support the youth. Anoual collaborates with other organizations to empower young leaders, have a social impact, and foster social innovation. One of the newest projects is the DigiGirlz mentorship program. This program allows girls, ages 15 to 18, interested in STEM to mentor and tutoring in preparation for further education or careers. The program involves teams of four, all from the same school, receiving

two full days of training in STEM, critical thinking, leadership, communication, and teamwork. After the training, the teams return to their schools, where they will select and collaborate with ten more students to create a technology that will help their community. These technologies will then be presented at a competition. Anoual has multiple other programs similar to this.

Anoual has been working with WPI on IQP projects since 2020—the IQP in 2024 with Anoual focuses on the EduKathon program. The WPI team provided recommendations on a program that Anoual runs called Edukathon, which is a youth mentorship program that fosters social innovation in youth. They do this by training a group of mentors in social innovation, which gives them a better ability to develop and implement ideas. The mentors then return to their schools and develop a project with a larger group that helps aid the reduction of prevalent social issues.

3.0 Methodology

This section outlines the research methods the project research team (PRT) used to collect essential data to complete the project objective. The scope of the problem required a mixed-methods approach to collecting data, which included conducting surveys and interviews and creating rubrics and outlines. Each approach uniquely contributed to completing the project goals.

3.1 Interviews with WPI Faculty

The PRT interviewed Professors Mohammed El Hamzaoui, Tahar El Korchi, Rebecca Moody, and Aaron Sakulich, who all held previous positions as an advisor and/or director at the RPC, to establish a framework for future endeavors while onsite in Rabat. PRT members conducted the interviews either in person or virtually with the faculty. Interviews were audio recorded, lasted about 45-60 minutes, and were transcribed (See Appendix A for structured interview questions). The interviews served as a vehicle to better understand the history and background of the RPC's past projects. They helped to identify the criterion that would be used to assess future sponsors. Additionally, the PRT was connected to former and potentially new sponsors in Rabat through the WPI faculty interviews.

3.2 Survey to WPI Students

Workers are 13% more productive if they are happy (University of Oxford, 2019); therefore, engaging and exciting projects generate greater passion and drive from those involved in their completion. The PRT created an online Google Forms survey to assess WPI student preferences regarding the kinds of projects they are offered. This survey used a Likert scale with a single open-ended question for participants to identify the most exciting projects. The survey was distributed to current and former WPI students through WPI-social media platforms,

including Snapchat, Instagram, WhatsApp, Slack, and Discord. The survey included demographic questions to gather information on a student's current year of study and former participation in IQP projects. Likert scales were used for the next set of questions, separately scoring the importance of site location and available projects when determining their IQP preferences. Additionally, students were asked to rank various types of projects based on interest using a forced ranking scale (See Appendix B: Survey to WPI Students).

3.3 Sponsor Rubric and Criteria

The PRT created a rubric with multiple criteria to assess future sponsors. The rubric criterion identified essential attributes of a sponsor that would contribute to a well-defined and impactful project and provide an engaging experience for both students and sponsors.
The criteria were created through faculty interviews, informal conversations with current IQP cohort members, and the PRT's own experiences with various projects and sponsors. Each potential sponsor was assessed after the PRT met with them. Current 2024 RPC sponsors were also assessed using the same rubric. (See Figure 2 for the sponsor rubric and criteria).

Criteria	Point Scale			
	4	3	2	1
Sponsor Enthusiasm	Sponsor exhibits excessive passion, drive, and excitement. They may be energetic, optimistic, and actively involved. May also have strong dedication to the opportunity.	Sponsor exhibits interest and passion in learning more about working with future cohorts. May demonstrate high levels of energy or activity.	Sponsor exhibits mild interest in working with future cohorts. Might be hesitant or slow to learn more about the project experience. Enthusiasm isn't sustained or intense.	Sponsor exhibits little to no interest in working with future cohorts. Can be determined by tone, inflection, or lack of questions or ideas
Sponsor Resource Support	Sponsor can commit to providing all necessary resources for the duration of the project.	Sponsor can commit to providing most necessary resources and assiting the team with finding those they can't.	Sponsor could provide some resources but can't commit to their availability.	Sponsor has no resources they can provide the WPI project team and is unwilling to help them find what they need elswhere.
Sponsor Location Accessibility	Location is less than a 20 minute journey from FIGIUG and is easily accessible by one mode of transportation.	Location is 30 minutes away and can be accessed by a combination of Tram, Taxi and or walking.	Location is in another city and requires taking a train or more advanced mode of transport.	Location is in a remote area of the country.
Sponsor Timeliness and Responsiveness	Sponsor always responds within a day or less. They are able to have one or more weekly meetings with the team and accomodate extra meetings if necessary.	Sponsor usually resonds within a day or two. They can only commit to weekly meetings and with some flexibility.	Sponsor is inconsistent with responses but will eventually respond within a couple days. Little flexibility with meetings if weekly is even possible.	Sponsor disregards the messages of the groups ie. taking more than a week to respond or seeing the messages and not responding at all. Sponsor has no time to meet at all.
Sponsor Uniqueness	Sponsor has never been worked with before and is distinct in their affiliation and passion. They bring new and novel ideas and perspectives.	Sponsor hasn't been worked with more than a once or twice. Their affiliation is distinct from other sponsors and brings new perspectives.	Sponsor has been worked with a few times and is somewhat similar in affiliation to other sponsors.	Sponsor has facilitated on multiple projects in the past and is very similar in affiliation to other sponsors.
Sponsor Network Robustness	The sponsor boasts an extensive network of connections in Rabat, establishing a strong support system that guarantees the longevity and resilience of the relationship.	The sponsor has significant connections in Rabat, contributing to a substantial support network that enhances the stability and sustainability of the relationship.	The sponsor possesses some connections in Rabat, indicating a partial support network. While there are connections, they may not be extensive enough to provide robust support or ensure the longevity of the relationship.	The sponsor has little to no connections in Rabat, resulting in a limited support network and uncertainty regarding the longevity of the relationship.
Proposed Project Compatibility	Proposed project(s) provide a unique and engaging opportunity to future cohorts. Project(s) are exciting & interesting. The project(s) have excessive potential to resonate with future cohorts.	Proposed project(s) provide a potentially engaging opportunity. Projects might have been seen before, but they still elicit some feelings of excitement and interest. Projects might involve handling some lightly sensitive information.	Proposed project(s) provide a somewhat engaging opportunity. Projects have been seen before and are not unique and/or they involve sensitive subjects that need to be handled with caution.	Proposed project(s) is on a controversial or sensitive topic that may cause emotional harm to the group or place them into uncomfortable situations. Proposed project(s) are not unique and have been done/seen before.
Project Intersection Between Society and Technology	Project has the perfect balance between the societal aspects of an IQP and the technical knowledge students have learned from WPI.	Project is almost perfectly balanced between social and technical aspects but has a slight emphasis on one over the other.	Project is primarily technial or social focused but solutions will still requires some research into the excluded area for complition.	Project is either too technical or too social. For example, the project is strictly about coding, or building with no social implications. Or on the other end the project resembles a mission trip.

Figure 2: Sponsor Rubric and Criteria

3.4 Snowball Sampling

Cold-calling organizations often lead to little in terms of responses and results in Rabat, Morocco (Professor Mohamed El-Hamazaoui, April 8th, 2024). A much more effective way of obtaining connections necessary to the project's success is to, in essence, know someone willing to connect others to their expansive network– as in, “know a guy who knows a guy.” Given the importance of a relational network, the snowball sampling method was determined to be the best way to connect to a wide variety of potential sponsors. Snowball sampling is a common method used in sociology and psychology research (Simkus, 2023). The method is called “snowball” because of the idea that the network of participants grows continuously like a rolling snowball (Simkus, 2023). The idea is to use existing participants to recruit future participants from among their acquaintances to participate in the study (Simkus, 2023). The PRT implemented snowball sampling into their methodology by requesting that every sponsor connect with their network and suggest other individuals who could be a good fit for a future IQP project. This request was made within the first or second interview with the potential sponsor. Due to Morocco’s social landscape, the network of potential sponsors would continue to be minuscule without utilizing this method. A more robust, willing, and diverse array of sponsors could be reached by connecting with potential sponsors and having them use their network to identify others.

3.5 Interviews with Potential Sponsors

Interviews were conducted with potential sponsors to determine their interest and compatibility for being sponsors for the RPC 2025 cohort. Interviews were in-person and audio-recorded with the potential sponsors' consent. The entirety of the PRT was present in all interviews. Initial interviews focused on the sponsor's background–who they were, what they did, and why they were interested in connecting. The meetings were intended to create an

understanding between the project team and interviewees, help develop discussed ideas, and eliminate misconceptions. Follow-up interviews with sponsors focused on project ideas, their feasibility, and what the sponsor considered a potential project in their organization. These interviews allowed the sponsor and the PRT to define and clarify a problem of practice, determine the balance of social and technical aspects of the project, and communicate where students were expected to work. Although there was a list of questions to follow, interviews were not heavily structured; instead, the intention was to maintain a casual conversation and allow for a natural flow of topics (See Appendix C: Interview Questions to Potential Sponsors).

3.6 Project Outline Template

A consensus of interest between the PRT and a potential sponsor regarding the development of a project for the RPC cohort of 2025 was essential. A project outline template was developed to standardize the process of developing project descriptions. The template included all the necessary information to understand a project, such as the responsibilities of the sponsor's role in leading the project. Additionally, it highlighted information about the organization, project vision and goals, research questions, preliminary tasks, supporting documents, and key contacts. The project team and the potential sponsor used the template so that both parties could outline specific details, come to a shared understanding, and confirm the project for the next RPC 2025 cohort. (See Appendix D: Project Outline Template)

4.0 Findings

This section focuses on the conclusions drawn from the data collected. Themes revealed through the various methods are presented to support recommendations for strengthening the RPC and developing engaging and impactful projects for the 2025 student cohort. Findings relate to one or more of the PRT's objectives: identifying new sponsors, developing new projects, and improving systemic faults within the RPC.

4.1 Interviews With WPI Faculty

This section discusses the key findings obtained from interviews with WPI faculty previously involved with the RPC through advisorship or directorship roles. All interviews mentioned common themes regarding the definition of IQP, important sponsor characteristics needed for robust relationships, and the sustainability of the Global Experiences Office's (GEO) practices.

4.1.1 Faculty Perspective: What is an IQP?

While WPI has formally defined the IQP, how it is seen from a faculty perspective–that is, the people who have arranged and overseen multiple projects directly rather than abstractly– can often be different from an administration perspective. According to Professor Rebecca Moody, a faculty member in the Humanities and Arts department and a former RPC advisor and Center Director, an ideal IQP is one that requires students to complete a project based on a research question that is not specific to their major–and ideally not related to it either– that sits at the intersection between science and culture that lasts for about 14 weeks. The first seven weeks of the experience are typically spent developing the methodology and figuring out the direction and scope of the project. The second seven weeks are used to change and implement the methodology and create and deliver recommendations to the sponsor (Professor Rebecca Moody,

April 15th, 2024). IQP is not an internship and should be explicitly stated as such to prospective sponsors. Instead, it's "a way to bring our [the students'] expertise to a different context, and differently learn and listen to the people around us" (Professor Rebecca Moody, April 15th, 2024).

Other faculty members also commented on the importance of why engineers need to understand the social implications of their work. In a STEM-focused university such as WPI, exposure to developing solutions within specific or unique contexts is often lacking. As stated by former RPC advisor Professor Aaron Sakulich, a faculty member in the Civil Engineering department:

> Sometimes, the social skill aspects are not as well developed as the math and science. Then I tell them [the sponsors] what I think is the quintessential IQP story, "I once advised a project in Morocco about what to do with a type of farm waste. The students concluded that the best thing to do was to feed it to the local pigs. I had to point out to them that Morocco is rather famously not a very popular country for eating pork. Their solution was technically perfect but socially unacceptable." This gets a laugh, and I think [whoever] I am talking to starts to get the idea. This was a real project, by the way. (Professor Aaron Sakulich, April 8th, 2024)

Through the IQP, students develop skills that will equip them to be successful in their future careers: skills of listening, learning, and adapting to a sponsor's or a client's feedback and needs dependent on the social and cultural context that those needs exist in (Professor Rebecca Moody, April 15th, 2024). Insights gleaned from interviews inspired the creation of the sponsor rubric criterion labeled "Project Intersection between Society and Technology" (Refer to Methodology Section 3.3, Table 3.3.1).

4.1.2 Sponsor Characteristics & Responsibilities

Selecting ideal sponsors for the RPC demands deliberate consideration of individuals interacting with future student cohorts. Insights from faculty involved in sponsor selection have been invaluable for the PRT, guiding their approach and mindset. When it comes to sponsors, a good sponsor, "is one that you have cultivated a long-standing relationship with. They will know you, they will know what an IQP is, they will know what you can expect of the students, and they will be invested in making sure the project turns out well" (Professor Aaron Sakulich, April 8th, 2024). This sentiment resonated among three-quarters of interviewed faculty members. Established relationships foster mutual understanding, facilitating smooth project experiences by aligning expectations and commitments.

However, a long-standing relationship needs a strong foundation in order to be sustained. For the PRT, this means identifying key characteristics in sponsors that are indicative of a healthy and supportive relationship within the RPC. Characteristics such as sponsor availability, communication, enthusiasm, and location are all critical to the resilience of the relationship (Professor Rebecca Moody, April 15th, 2024). The more enthusiastic a sponsor is, the more likely it is that they will be involved in the success of a student project (Professor Aaron Sakulich, April 8th, 2024). The closer and more accessible a sponsor is geographically, the more physical engagement the student project team can get with the sponsor (Professor Rebecca Moody, April 15th, 2024). These characteristics were utilized in creating the sponsor criteria and rubric (See 4.4.1) and identifying and grading these critical characteristics.

In addition to these personal characteristics, a sponsor has a few non-negotiable responsibilities to which they are expected to commit. Sponsors are expected to meet with students once or twice during ID2050, a prerequisite course that teaches students about the

research process. However, while students are in-country over the seven-week project duration, sponsors are expected to meet with students for at least one hour per week (Professor Rebecca Moody, April 15th, 2024). Additionally, sponsors must provide guidance and necessary resources to their student project team (Professor Aaron Sakulich, April 8th, 2024). Guidance is the advice and feedback a sponsor is expected to provide to their student project team. Resources refer to anything the student team would need to complete their project successfully. Support can range from a physical working space to setting up tours and interviews, as Professor Aaron Sakulich describes:

> A sponsor might meet with a team and say, "Ah, you should talk to someone in the hotel industry about this," and I would expect them to provide some leads on people to talk to. Or if the students need to tour a site, they can arrange the tour. Or if the students need to read a book, they give them the book. (Professor Aaron Sakulich, April 8th, 2024)

Aside from resource support and a time commitment, sponsors must set aside their expectations and be open, creative, and involved with the student teams' process (Professor Rebecca Moody, April 15th, 2024). Once a research question becomes the students', the project can go in any direction the team chooses. The sponsor should act more as an advisor, but even then, they are not the sole source of information and should expect students to raise new options or provide a new perspective than they originally planned (Professor Aaron Sakulich, April 8th, 2024).

Responsibilities and characteristics aside, connecting with sponsors requires nuance and context. From the PRT's interviews with former faculty, it was revealed that some methods of outreach are more effective than others. "It is much better to be introduced by someone you know. There has to be that personal connection" (Professor Aaron Sakulich, April 8th, 2024). As a result, the PRT found that reaching out to former project center directors and current sponsors

to assist in locating other sponsors was helpful. The importance of relationships was underlined by the PRT's ability to meet with those previously involved in the RPC due to the strength of relationships that had been previously established.

4.1.3 Unsustainable Directorship & Advisorship Practices

Since 2000, the RPC has provided students with IQP experiences. It has witnessed turnover among advisors and directors over the past two decades. The PRT uncovered ways to enhance the RPC's relationship resilience and understand the factors contributing to its current challenges. Findings suggest that existing incentives for faculty members from other departments to take on the directorship role at RPC are not as compelling as they should be, resulting in a lack of sufficient motivation for their engagement in this crucial position. "Because we are not in the Global School, it did not really count for tenure or promotion, and we're not really being compensated for it financially. So, it really has to be a labor of love, and at the end of it, it comes down to a cost-benefit analysis" (Professor Rebecca Moody, April 15th, 2024). It was even mentioned that the voluntary nature of directorship could get in the way of developing sponsor relationships:

> The main challenge is the logistical constraints at WPI…How does one develop or maintain those [sponsor] relationships? A center director can't travel to their center 4-5 times a year just to chat with potential sponsors. (We used to get a one-week trip once a year, covered by WPI, but I don't know if that is still a post-pandemic thing or if that funding got cut as well). And since directorship is a voluntary thing that I do because I like it, it doesn't count towards my career in any way. There's no spot on the promotion application for "maintaining good relationships so students have good projects" (Professor Aaron Sakulich, April 8th, 2024).

Requesting professors to invest additional effort and time into a system that fails to adequately benefit or reward them can be a pathway to burnout, showcased by the resignations of faculty members from their positions. The current reality is that WPI faculty members possess the necessary expertise to effectively guide and educate students about the RPC. However, several shared that it was difficult to participate due to a lack of compensation, whether career-focused or financial. Some professors offered insight as to why they think this flaw exists:

> I am guessing from the outside looking in we are not funding the Global School in a way that is sustainable, which means then that we do not have the project center directors that we need. Why did I step away? For this reason… If we are promising students that they are able to go on IQP we need to fund the Global School in a way that is sustainable. We need to make sure that there are ID2050 instructors, directors, and advisors who know what they are doing. (Professor Rebecca Moody, April 15th, 2024)

Recruiting and supporting instructors, directors, and advisors with IQP site education and experience is essential for leveraging their expertise to inform and prepare students better. These directors and advisors possess unparalleled potential to educate and challenge students' perspectives. However, without meeting their needs and adequately compensating for their experience, the RPC risks losing qualified faculty from directorship and advisership roles.

4.2 Survey to WPI Students

This section discusses the findings obtained from our survey distributed to current and former WPI students. The responses of the 62 student participants were critical for evaluating the IQP experience. Respondents' preferences and opinions are fundamentally tied to the development of engaging projects and a robust RPC.

4.2.1 Demographics

Demographic questions are critical as they provide distinction and context for respondents and their answers. 90.2% of respondents are sophomores or older. This data reveals that at the time of their response, each had at least some experience with the IQP process, even if it was just site preference selection in the case of sophomores. 63.8% of the respondents had already completed their IQP. These trends are important as personal engagement with the IQP provides a better perspective of what it entails and greater validity in responses to the rest of the survey. Freshman responses, those with no IQP engagement as of yet, are still valuable as they represent an expectation and hope of what the IQP could be, unbiased by the lived realities of the program. Trends discussed in the rest of this section are based on all survey respondents and not separated by demographics to ensure a representative analysis.

4.2.2 Site and Project Importance

In theory, the IQP is more about the specific project and students' experience completing it than the location where it is done. The majority of the 15 weeks, 7.5 weeks for preparation and 7.5 weeks for on-site, is spent dedicated to the project's research, development, and completion. Therefore, this focus should have a more significant impact on a student's experience with the IQP than the location where it is completed.

The average site importance score across respondents was 4.3 out of 5, while project importance averaged only 3.6. This data shows that students prioritize location over projects when selecting their IQP, a trend that contradicts the intended focus of this program. These results are somewhat expected, considering that students are not informed of location-specific projects prior to selecting their IQP site. However, based on the presented data, they still find this information at least somewhat important.

4.2.3 Project Type Preferences

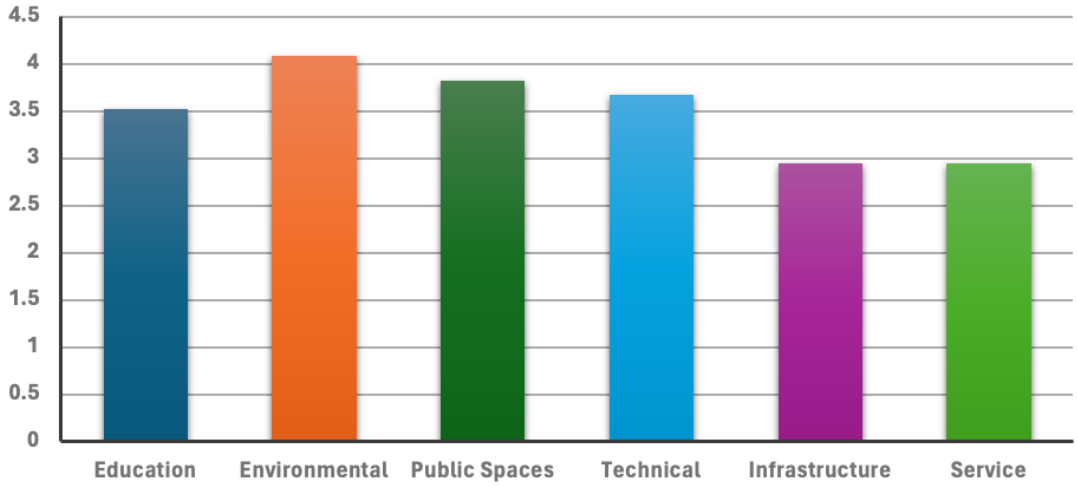


Figure 3: WPI Students Project Preferences. Environmental projects were the most preferred projects amongst the surveyed students.

The best way to determine what projects would be most interesting and engaging to WPI students was to get their direct feedback. To this end, a forced ranking scale was used to gather data on how students ranked different types of projects. As seen in Figure 3, an environmental focus had the highest average score of 4.1 out of 6, making it the most preferred type of project by students. Following in preference, were Public Spaces (averaging 3.8), Technical (averaging 3.7), Education (averaging 3.5), and finally, Infrastructure and Service were tied for last (both averaging 2.9).

Although technical projects were the third most interesting project type, they were also the most controversial. As seen in Figure 4, 38% of respondents ranked this focus as the most interesting and 28% as the least interesting. This trend resulted in the most significant standard deviation of 2.1. This finding

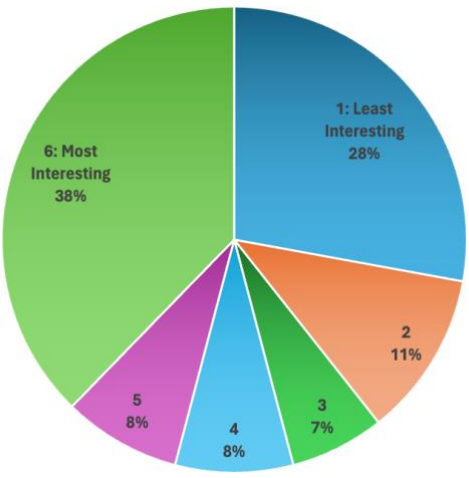


Figure 4: Breakdown of technical project preference.

reveals a significant polarization around technical projects and has important implications for ensuring that proposed projects engage as many students as possible. Although many students would find a technical project engaging, many have no interest in it, which could create conflict in a project team working within this focus.

4.3 Interviews with Potential Sponsors

The interviews with potential sponsors were an essential part of the project because they gave the team an understanding of the organization's work and the kind of projects they could sponsor.

4.3.1 UN SDGs: A Framework for Project Development

In the first interview with a sponsor, the team learned about the potential sponsor's background, affiliations, and previous experience working on an IQP. One of these conversations quickly shifted its focus towards the UN Sustainable Development Goals (SDGs). The team learned how vital SDGs are in Morocco and how much they are part of a school's vision and goals. As a follow-up to the interview, the team did in-depth research on SDGs, including specific actions taken by the government, funding, and involved organizations in Morocco. This research provided the team with a framework for all potential projects. Integrating SDGs into an IQP project helps give a strong balance between societal implications and technical aspects. They also allow WPI students to engage in and complete an impactful project. The importance of SDGs in Morocco was further proven when the team interviewed the current professor overseeing IQP projects at UIR. As soon as the PRT arrived on campus, it was evident that UIR integrated the values of SDGs in their students' learning with multiple murals of the SDGs posted throughout the campus, as seen in Figure 5. Also, the projects being developed in collaboration with UIR contribute to several SDGs. For example, the current educational robotics project

contributes to quality education (SDG #4). This project assesses whether robotics contributes to a student's computational thinking in K-12 schools. Using this research, the school can develop curriculums that effectively develop computational thinking. The second project is research in water management in agriculture and desalination. This project contributes to numerous SDGs, including clean water and sanitation (SDG #6) and affordable and clean energy (SDG #7), as it will focus on how Morocco deals with water management and whether solar-powered desalination will provide a better solution to the problems in water management.

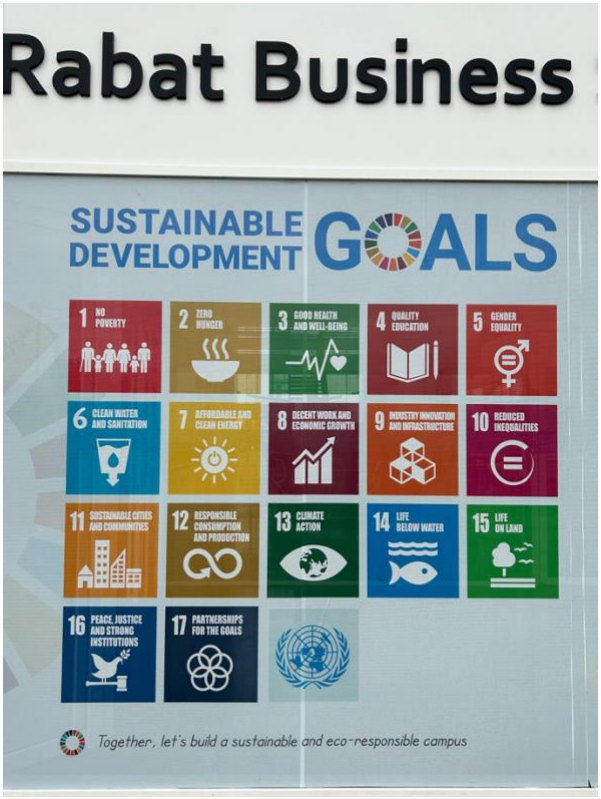


Figure 5: Sustainable Development Goals mural seen on the campus at UIR.

In addition to projects with an SDG focus, other potential projects also naturally incorporated SDGs even when they were not part of the defined goal. This connection is evidenced in the project with Au Grain de Sésame, which aims to improve the manufacturing process of the company's products using recyclable materials. Au Grain de Sésame uses recyclable materials to create products such as wallets, belts, clothes, and similar goods. They also provide an opportunity for disadvantaged women to receive training to make these products and get a percentage of the income after it is sold. These projects will contribute to gender equality (SDG #5) and no poverty (SDG #1).

4.3.2 IQP Implications: Gaps in Understanding

One of the PRT's most significant obstacles was providing the potential sponsor with an in-depth understanding of what an IQP entailed and the team's goals. During one of the PRT's early interviews with a potential sponsor, there was an apparent lapse in understanding. The sponsor thought that the PRT was planning to conduct a research project in the near future rather than creating projects for next year and future cohorts. This challenge served as a valuable lesson to the team for approaching future meetings with other potential sponsors and creating new projects. Given the team's lack of time in Rabat, a new strategy had to be formulated to provide a sponsor with an in-depth understanding of the IQP, the team's goal, and how to move forward. The team would then prioritize each of these steps to alleviate any confusion or misunderstandings. Explaining what an IQP is to someone who has never heard of it before proved harder than the PRT thought, especially with a language barrier present. Once the potential sponsor had an understanding of the IQP, the PRT had to explain that they were creating projects for next year and would not be the ones specifically working on the formulated projects.

Another prominent example of how IQP can be misinterpreted was evident through our meetings with another potential sponsor. In our last meeting, the sponsor had asked whether it was possible for the project to start earlier than March of 2025. The PRT had not explained clearly enough that the project would be conducted by next year's cohort, which will arrive in March 2025. The PRT had to step back to explain to the potential sponsors that the RPC only takes place once a year in D term, which is from the beginning of March to the end of May. Once both parties were on the same page, the project discussion could move forward to set project details in place.

4.4 Sponsor Assessment

The Sponsor Rubric allowed the PRT to convert the qualitative observations from the sponsor interviews into quantitative data to further assess the feasibility and compatibility of a sponsor and their proposed project aligned to the values of an IQP. Assessing current sponsors (CS) gave the PRT a baseline of typical sponsors and expectations to compare to potential sponsors (PS). Teams currently engaged in projects in Morocco were asked to review the rubric and assess their current sponsors informally. Three out of the five projects had the same general sponsors. However, other colleagues were assigned to oversee the projects, so the average grade of their general sponsor was determined based on their overall score. The PRT responsible for this paper did not grade their own sponsor. Current sponsors were assessed by their respective research teams.

By analyzing the information gathered from the interviews and observations of CS and PS, the PRT identified the following findings concerning sponsor and project compatibility:

4.4.1 Potential sponsors generally scored higher than current sponsors in all categories.

The total score of the three PS the PRT met with was higher than the CS by at least six points. As seen in Figure 6, the average PS scores exceeded the CS score in every category. As seen in Figure 6, the most significant discrepancies between the two groups were in the Intersection Between Society and Technology, Project Compatibility, Sponsor Timeliness and Responsiveness, and Location Accessibility criteria.

Additionally, at least two out of the three PSs received scores that were greater than or equal to the CSs on seven out of the eight criteria on the Sponsor Rubric. The only exception to this was in the Sponsor Resource Support category, where CS2 scored the highest, and PS1 and PS2 scored one point less (See Appendix I: Overall, potential sponsors exceeded all of the

criteria necessary to conduct a lasting relationship and develop an impactful project (See Appendix I: Table of Cumulative Sponsor Scores).

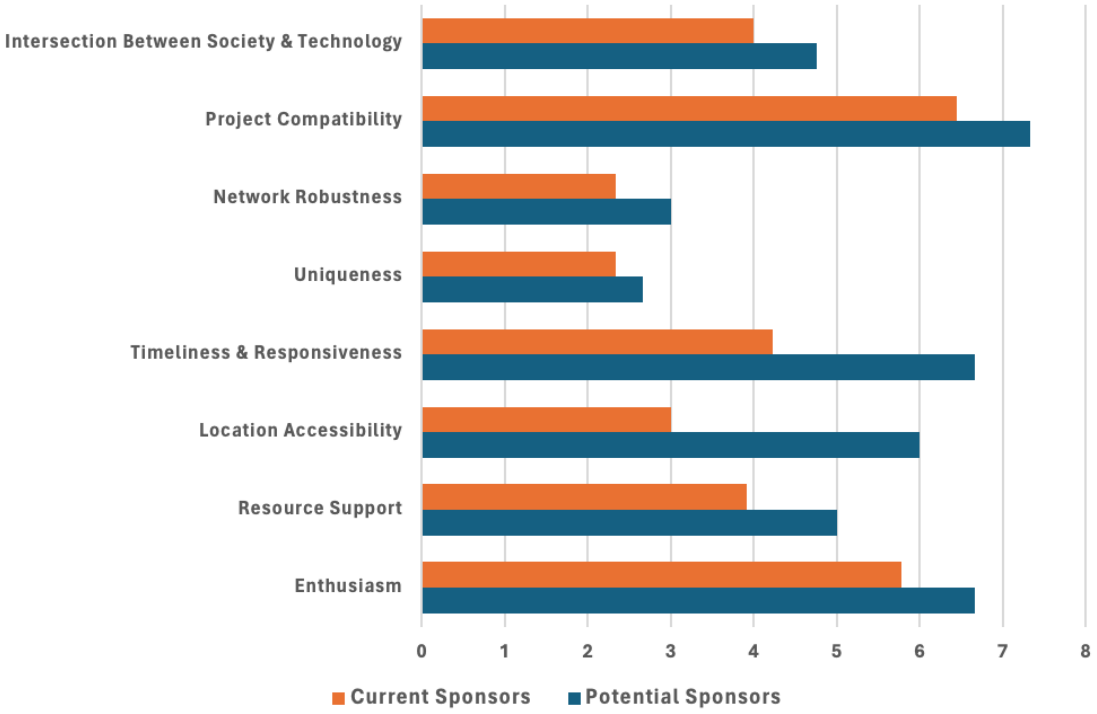


Figure 6: Average Sponsor Scores Grouped by Criteria.

4.4.2 Sponsors with affiliations to engineering institutions scored higher in Project Intersection Between Society and Technology criteria as compared to other sponsors

PS2 and CS3 are sponsors who are currently working for an engineering institution in Rabat. Both sponsors scored perfectly in the Intersection Between Society and Technology criteria. One group who worked with CS3 felt like their project was the exact definition of what an IQP was; another team who worked with the same sponsor also stated that their project used both the societal norms present in Rabat and the technical skills learned at WPI to succeed in their research.

4.4.3 Sponsors with school affiliations were not perceived as unique

PS2 and CS2 both scored a two in the Sponsor Uniqueness criteria, while CS3 scored a one. Although PS2 and CS3 proposed projects had full points in Intersection Between Society

and Technology Between Society, they scored very low in Sponsor Uniqueness. A team that worked with the CS3 stated that a sponsor asking them to conduct a survey on a school campus was a common theme in project ideas for the IQP, but they felt as if their topic area was still exciting. Another team tasked with a similar project under the same sponsor echoed the claim that survey-based IQPs were not original. It is also important to note that both PS2, CS2, and CS3 have sponsored at least multiple IQPs which contribute to the low scoring in this criteria.

5.0 Discussion & Recommendations

This section focuses on the importance and applications of themes and data analyzed in the findings. It is structured by relevance to implicated entities and aspects of research projects. The PRT's methodology and findings support discussion and recommendations. While there may be limitations due to the research timeframe and availability of resources, the topics discussed accurately represent current RPC's strengths, shortcomings, and paths to improvement. Also provided is a selection of qualified potential sponsors with engaging and impactful projects to ensure the success of the 2025 Student Cohort.

5.1 Rabat Project Center (RPC)

This section discusses the implications of the data drawn about the RPC. Findings indicate three major roles that comprise the entirety of the RPC experience: directorship and adviserships, student experience, and sponsor selection. This section discusses the implications of faculty and sponsor interviews, and student surveys and draws recommendations from them. Limitations in every step of the research process are also addressed.

5.1.1 Directorship & Advisership

Conversations with WPI faculty previously engaged in the RPC unveiled a stark reality: the actual IQP experience often diverges significantly from its advertised depiction. Directors are meant to be the liaison between potential sponsors and students, creating a network that supports the livelihood of their project center. WPI faculty interviews revealed a concerning trend: professors with substantial education and experience in the RPC are not duly acknowledged for their expertise and contributions, which could be a factor in why they leave the RPC. Therefore, without this expertise, students–who are intended to gain a social education through IQP

exposure–lack the necessary background knowledge and support to address international social issues with nuance.

Additionally, when directorship undergoes transition, connections with sponsors and organizations can falter, resulting in the hiring of staff lacking proper contextual education on the project center's culture. Consequently, student cohorts are ill-prepared for international sites, lacking essential guidance for achievement. Therefore, it is crucial to address these issues to ensure that students and faculty are both well-prepared for success during their time at the RPC.

A limitation of the PRT's findings on the experiences of prior directors and advisors is that only faculty from at least a year ago could be interviewed. This barrier is primarily because there are currently no long-term full-time WPI faculty actively involved in the RPC, as the project center is presently completely staffed by new adjunct faculty. Additionally, at the time of the project being conducted, the RPC had no center director. While the PRT was informed about several individuals who may be taking on the role, no one was officially announced during the entirety of Spring 2024.

Directorship and advisorship for an IQP site is an important role. For one to succeed at it, extensive knowledge or experience about the location and strong interpersonal skills are required. These individuals directly affect the quality of the students' IQP experience. Therefore, those involved in such influential roles should be duly recognized and valued. In acknowledging the multifaceted responsibilities of this position, it is essential to consider a competitive salary in an effort to preserve the intrinsic motivation of involved faculty and external candidates. Additionally, it is recommended that the advisor or director positions be seriously considered as significant experiences in the promotion or tenure process for any faculty member who may

serve in any one of these positions, as the role demonstrates the skills required of a quality WPI faculty member.

The PRT recommends addressing compensation for these roles as well as conducting exit surveys for faculty resigning from directorship/advisorship– if they have not already– to gain valuable insight and criticism for program improvement. Although this project focused on the resiliency of the project center in Morocco, the PRT found that the network of the RPC at WPI is also lacking. The PRT suggests that the RPC facilitate conversations between newly hired faculty and existing campus faculty who possess knowledge about the RPC and Morocco to aid in their learning process. Additionally, providing new faculty with proper training and education on the RPC and Morocco through workshops or educational programs offered by GEO would be necessary to succeed in their roles and effectively advise and/or direct future student cohorts.

5.1.2 Student Experience

During the implementation of the methodology and the analysis of findings, student experiences reflected deficits in several areas of the IQP. Starting with the first step in the IQP process, project site selection, several areas for improvement were identified. As stated in the Findings section 4.2.2, students place importance on the specific project offerings when selecting a site. However, location is the only metric students use for ranking project site preferences, as project information is largely unavailable. This disconnect is problematic because after being assigned their IQP location, students may discover that none of the offered projects excite them. This situation exists because the established timeline within the WPI GEO is to finalize projects close to the start of ID2050, months after students have been assigned their location. The PRT recommends that comprehensive information on site-specific projects be easily accessible to students before they rank and are assigned their IQP location. The success of this research

project is proof that sponsors and projects can be established at least a year in advance. This advanced timeline will also help solve another issue in the IQP student experience. As revealed during the assessment of current sponsors, many projects for the 2024 RPC cohort shifted dramatically throughout their completion. This inconsistency was due to the last-minute finalization of many of the projects and communication with sponsors, which led to lapses of understanding. Finalizing projects well before the start of ID2050 allows for the necessary time to confirm project details and develop accurate and comprehensive project descriptions for students.

The PRT recognizes that finalizing projects a year before their completion may still not be early enough to provide site-specific project offerings before students rank their location preferences. However, in cases where this is true, improvements can still be made to the project information available to students to allow for a more informed location preference ranking. On the WPI eProjects website, where IQPs are listed, several locations include some information on project opportunities. When available, this information commonly gives a brief outline of past projects, but this does not guarantee that future projects will be comparable. Instead of having inconsistent information across locations in both format and content, a more streamlined and uniform approach should be implemented. Using the project types listed in the Survey to WPI Students, trends in the focus of previous projects (Ex. Environmental, Technical, Public Spaces) should be identified. These trends should be made available to students so they can better predict the kinds of projects common to any given IQP site instead of having to draw conclusions from one-off projects that usually have no implications on future ones.

The overarching theme around problems within the student experience is a lack of accurate and timely information and preparation. This trend leads to less prepared students, less

successful projects, and a less fulfilling IQP experience for all those involved. These identified issues can be eliminated by implementing the PRT's recommendations of confirming projects and sponsors further in advance and enhancing the information available to students before selecting their IQP location preferences.

5.1.3 Sponsor Selection

Sponsor selection was based almost entirely on Professor El-Korchi's network. The PRT initially planned on using snowball sampling methods, but this sampling vehicle was not as successful as the PRT had hoped. Snowball sampling directly resulted in two additional contacts for a potential sponsor. Asma Benachir, the owner of NGO Au Grain de Sésame, provided the team with a list of contacts for organizations she knew of who would be interested. However, as the team would find out, cold emailing does not work successfully in Rabat. Toward the end of IQP, the PRT interviewed Souhil Stitou, the Edukathon sponsor, and he mentioned that previously, he had provided an RPC director with a list of contacts of NGOs he knew who were willing to sponsor a project. Some of those sponsors eventually had their own projects the following year. This incident highlighted how it is essential to have organizational relationships as compared to interpersonal relationships between sponsors and WPI.

When meeting and interviewing with sponsors, one common theme was that the concept of IQP was hard for the sponsors to understand. IQP is not a typical study abroad program, so it takes significant effort to explain. Even for the past sponsors they had difficulty grasping what the IQP is and what our specific project entailed. All of the potential sponsors the PRT spoke to had trouble grasping what IQP was. The disconnect was costly because rather than focusing efforts on developing projects, more time was needed to fully describe and set aside misconceptions about what the IQP is.

The most significant limitation while selecting sponsors was time. Lasting relationships take time to build, but in the seven-week time frame that the research term was tasked to do the year-round job of a project center director, the PRT always felt rushed to build upon those relationships. Snowball sampling was not as successful as intended because it takes time for one to contact others within their network about an opportunity like IQP. Meetings with two potential sponsors could not occur because they were scheduled for the last week of the project when the PRT had to write their paper. Additionally, it takes time to flesh out and fully ensure the quality of each project. Another limitation to selecting sponsors was that the PRT's sample size of sponsors was relatively small. The PRT was very grateful to build on the relationships established by Professor El-Korchi. However, at the same time, the relationship work culture of Morocco hindered the team from creating an even larger sample size for the project. The initial goal of finding sponsors far and wide in Rabat was limited to the contacts provided to the team.

Recommendations for supporting the future RPC director and program include: Having a director who is familiar with Rabat and has a network of contacts already in place. It is crucial to have an RPC director who is already well-established to various organizations within Morocco. Essentially, someone who has a 'foot in the door' with organizations and can leverage these relationships to best help WPI students and the organization itself. Creating relationships with organizations from scratch is difficult, so having solid relationships beforehand would give the RPC a jumpstart in creating meaningful projects. Second, while these individual relationships are essential to begin the talks of sponsorship, it is also as important to transfer the personal relationships into organizational ones. As the RPC has experienced in the past, one-to-one relationships between a director/advisor and their sponsor tend to end as soon as either party leaves their position. Organizational relationships with WPI and a sponsoring entity would be

ideal because when a contact person leaves either party, another person can take their position and continue the relationship. Third, the RPC must create a handout to present to sponsors about IQP and what their duty as a sponsor entails. The disconnect between the sponsors' understanding of the entire IQP process was evident in the practices exhibited by current sponsors as well as potential sponsors. The PRT designed a potential infographic and slideshow, which a future RPC director can build upon (See Appendix E and Appendix F).

5.2 Projects

The following section will outline the proposed projects for the 2025 Rabat Project Center cohort. After interviewing multiple times with potential sponsors, the team needed to outline and determine the details of each proposed project. This template (Appendix D: Project Outline Template Example) was critical because it helped keep the team members and the potential sponsors on the same page in terms of details of the project. Potential sponsors would read through the team's project outline, make changes, and provide additional resources as necessary. The following projects were identified for future implementation. Team researchers will put potential sponsors in contact with Dr. Kent Rissmiller, the Dean of the Global School.

5.2.1 École Marocaine des Sciences de l'Ingénieur Projects and Sponsors

The team and the sponsoring professor from EMSI developed two projects for next year's cohort, and he will exclusively sponsor the first project. This project will involve utilizing Artificial Intelligence (AI) and adaptive learning systems (ALS) to evaluate an engineering curriculum at EMSI while incorporating SDGs. The other project is the augmented reality museum of Rabat, which will be co-advised by another professor who is establishing a virtual museum in Marrakech. This project will focus on conveying the culture, history, and landmarks

through augmented reality to provide people with a better understanding of the important aspects of Rabat.

5.2.1.1: Project A: Engineering Curriculum with Sustainable Development Goals

Through various methods, the team assigned to this project will collect data on the current state of EMSI's engineering curriculum and their efforts to include the United Nations Sustainable Development Goals. They will be under the direction of the EMSI professor, who will oversee this new addition to their curriculum. A current initiative on sustainable development for computer science is already underway. First, progress will be analyzed to determine effectiveness and impact. Additionally, benchmarking other engineering programs, mapping engineering vs. the SDGs, and reviewing the European Network for Accreditation of Engineering Education (EUR-ACE) and other accreditation board requirements will provide context for a successful and impactful curriculum. The team will also analyze the use of adaptive learning systems (ALS), which uses AI to match a student's level of learning, present in the proposed curriculum. The final project deliverable will likely be comprehensive recommendations for developing and improving the inclusion of the United Nations Sustainable Development Goals into EMSI's curriculum.

The head professor in charge of the project will guide the WPI research team in selecting the target population for their methods, including, but not limited to, surveys and interviews. This will help the team understand student perception and knowledge of SDGs and ALS on the EMSI campus. The professor will also guide the team in selecting engineering curricula to compare to the present EMSI curriculum.

The research questions involved in this project could center around what goes into a successful engineering curriculum and how sustainable development goals could be implemented

into it. The WPI team working on this should do a literature review on sustainable development goals and adaptive learning systems. The deliverables at the end of the project could include a revised curriculum of a specific department and how SDGs will be implemented.

5.3.1.2: Project B: Augmented Reality Museum

Through various methods, the project team will identify the most notable aspects of Rabat for showcasing the city, including historical, cultural, and geographical locations of interest. Once these elements are identified, the team will develop an online database, likely a website, to showcase the information interactively and engagingly. An augmented or virtual reality component could also be developed to improve immersion. The goals for the website and augmented reality are to contribute to accessible cultural and historical information about Rabat. When people visit a historical landmark, they can use their mobile devices to utilize augmented reality technology to learn about key facts. This project's primary focus is to convey the important historical and cultural aspects of Rabat in an accessible and engaging way.

A professor conducting a similar project in Marrakech will guide the team in utilizing virtual/augmented reality to capture Rabat's key historical and cultural aspects. They will also provide the team with necessary lab access and equipment.

The research questions for this project will center around Rabat's important cultural, historical, and geographical components. The team will conduct extensive research about these aspects of Rabat and how they can be conveyed effectively through augmented reality.

5.2.2: International University of Rabat Projects

Since 2021, UIR has sponsored a total of six projects, making them one of the most consistent sponsors the RPC has ever had. The head sponsor of these projects will oversee both projects next year. Previous projects have ranged from aiding UIR in gaining accreditation from

the Accreditation Board for Engineering and Technology to designing a digital health platform for Ibn Sina Hospital, located in Rabat. This past year, UIR sponsored half of the projects that were developed at the RPC. The first project was a continuation of a past project centered around educational robotics to improve computational thinking. The second project researched the effects of virtual reality on road safety awareness, while the last project investigated campus perceptions of generative artificial intelligence for the future. UIR's longevity and familiarity with IQP eased the project selection process. As UIR is a research-based institution, it has been effortless to fit the projects into the framework of IQP.

5.2.1.3: Project C: Computational Thinking Through Robotics

The Educational Robotics project is currently the only recurring project of the Rabat Project Center. The project started in 2023 (*Using Educational Robotics to Promote Creative Computational Problem Solving*, 2023) utilizing a creative computational problem solving (CCPS) learning model focused on students at the M'hamed Guessous private school. In 2024, the team continued with the CCPS study and aimed to assess how using the robotics kit contributed to computational thinking. This project aimed to provide teachers with training on how to use a robotics kit sustainably.

There will be a head sponsor for this project, as well as two other professors assigned to oversee the project. Two years of in-depth research have been established for the next research team to analyze as background and a starting point for their 2025 project. One of the main goals for this project next year is to change the setting, specifically to a public school in Rabat. Different demographics in the school can be studied, such as the effects of robotics on younger students or how the experience level of a teacher contributes to their willingness to adapt computational learning into the regular curriculum. This project aims to utilize the XRP beta

robotics kit to analyze how it contributes to computational thinking. After collecting data, WPI students will provide recommendations on implementing computational thinking into the school's curriculum.

The WPI team should consider ways to create a sustainable robotics curriculum that enhances computational thinking. This project's deliverables could include a lab handout, curriculum, and videos showing the use of robotics kits.

5.2.1.4: Project D: Water Management in Agriculture and Solar Powered Desalination

Due to water scarcity in some regions of Morocco, water management practices are a critical topic. The WPI team will conduct in-depth research on sustainable water management implementation, irrigation practices, and agricultural productivity in Morocco. The team will use mixed methods to assess the opinions of the relevant demographics affected by water management in Morocco. Some relevant groups include farmers, agricultural cooperatives, and institutions that research these topics. The team can utilize the solar-powered desalination prototype on the UIR campus. It is not full-size, as it is a prototype. However, it can contribute to valuable research on the future of desalination. The scope of work could include analyzing the efficiency, sustainability, and limitations of solar-powered desalination as compared to other methods. The team should also analyze various water management methods and compare them by how economical, efficient, and sustainable they are.

The WPI team should conduct in-depth research on water management practices in agriculture, irrigation, desalination methods, and sustainability in water management. This project's deliverables could include recommendations for sustainable water management practices and an analysis of water resources and methods.

5.2.3 Au Grain de Sésame Project

This project will focus on expanding the presence of a women's small business, Au Grain de Sésame, run by Ms. Asmaa Benachir, a previous sponsor. Au Grain de Sésame is a social enterprise founded by Moroccan artist Asmaa Benachir in Rabat, Morocco, in December 2007. This organization focuses on art within the framework of sustainable development and environmental preservation. With a vision to empower women through art and cultural exchange, Au Grain de Sésame has received numerous awards, such as the Seed Prize from the United Nations Environment Initiative in 2013, and was named the first laureate of the Museum Connect Award, organized by the American Alliance of Museums and supported by the US State Department, Bureau of Cooperation and cultural affairs. Au Grain de Sésame remains dedicated to enhancing socio-economic conditions by fostering artistic education, cultural exchange, and ecological awareness, seeking partnerships for sustainable development initiatives locally and internationally.

The first goal of this project will focus on increasing the online presence of Au Grain de Sésame. Since 2020, the need for more virtual and remote options has increased, making an online presence more needed than ever. This project will likely begin with researching the best virtual methods of reaching international consumers and local women. Additionally, creating a website for displaying and selling created goods would help with outreach and accessibility for those who cannot purchase goods online but would like to support the organization. The project would also assess the ability to make the online platform accessible for women, even if illiterate, by utilizing AI voice-based technology.

In addition to the online presence of Au Grain de Sésame, this project will also analyze ways to improve the manufacturing process of durable recycled paper goods. This focus will include researching ways to quicken or enhance the process and upscale production of these

durable materials to an industrial scale. These paper materials are used in the art creation process. They are subsequently sold, so any method to enhance the process will, in turn, create additional needed funding for the organization. Additionally, researching and creating a platform to teach this skill to women virtually is needed so that these workshops could be more accessible and have the opportunity to reach women who are farther away or remote.

The WPI team will work with Asmaa Benachir to understand how her business is run and how she uses recyclable materials. The team could develop a website or mobile application to expand her presence and reach more women within Rabat.

5.2.4 English Curriculum at Mohammed VI for Islamic and Quranic Studies

This project aims to engage the WPI team with Mohammed VI University students to provide suggestions for their English curriculum. One of the professors who runs the Mohammed VI English program will primarily direct the project.

This program at the institution focuses on simultaneously teaching the Quran and Islamic studies with English. The current curriculum aims to engage the students in meaningful conversations to give the students a more significant learning experience. The curriculum comprises seven units: reading, listening, vocabulary, grammar, communication, writing, and unit tips. The unit tip section had the professor engage the students in activities that they believed would benefit the student's English learning. The curriculum starts small with simple vocabulary, motions, verbs, and the alphabet, providing students with a foundation to build upon their learning. The curriculum broadens into more advanced topics as the students continue the course.

The WPI team will use mixed methods, including surveys and interviews, to learn about the students' and teachers' perspectives on running this course. This project aims to immerse the WPI team with the students at Mohammed VI so both parties can learn important aspects of each

other's culture and religion. Film as a teaching and learning tool will be integrated into the curriculum to give students a well-rounded understanding of English. Using these methods and working with the Mohammed VI students, the WPI team will be able to help provide recommendations to create a strong English curriculum. The collaboration will allow both parties to learn about each other and create a strong relationship between Mohammed VI and WPI. The culture and religion in Morocco are critical for a foreigner to learn about. In addition to the English curriculum, the WPI team will be able to provide cultural and religious information about Rabat to help the future of the Rabat Project Center.

As Culture and Religion are extremely important in Morocco, the WPI team should conduct in-depth research on these topics and how they affect daily life. They will then work with the professor to develop a beneficial English curriculum.

The projects for next year's cohort were created with sustainable development goals as a driving factor. The recurring goal between these projects is to have a direct positive impact in Morocco, specifically Rabat. In addition, it is in the best interest of WPI and the RPC to keep strengthening the relationships with these sponsors so that beneficial projects can continue to be created.

6.0 Conclusion

The findings and recommendations discussed in this report focus on the current state of the Rabat Project Center (RPC) and provide valuable insights into improvement areas to ensure future student cohorts' success. Several key themes emerged through various data collection methods, such as student surveys and interviews with faculty and sponsors, highlighting strengths and areas needing attention within the RPC. While determining the strengths and areas of improvement in the RPC, the PRT also determined six sponsored projects to aid the future RPC director in their search for sponsors within the following year.

Directorship and advisership within the RPC were identified as crucial factors impacting the quality of the IQP experience. Faculty who found themselves in this role shared that they were poorly supported and lacked recognition for their work. This reality leads to challenges in creating a sustainable and impactful project center. It is vital to enhance recognition and compensation for faculty, provide comprehensive training and ongoing support for newly hired staff, and implement exit surveys to obtain valuable insights for continuous improvement and address these issues. By prioritizing faculty members' professional development and well-being, the RPC can foster a more healthy and supportive environment for impactful project-based learning initiatives.

The student experience through the IQP process revealed notable challenges, particularly in project site selection and access to project details. Insufficient information about available projects prevented students from making informed choices that resonated with their interests. To enhance the student experience, it is essential to improve the accessibility and clarity of project information, streamline project descriptions for consistency, and finalize project details well in

advance. By implementing these recommendations, the RPC can empower students to embark on enriching and purposeful IQP experiences aligned with their academic and personal goals.

Sponsor selection emerged as another area needing attention, with reliance on personal networks hindering the ability to establish broader organizational relationships. Educating sponsors about the IQP process and their role was identified as a crucial step in ensuring successful partnerships. Recommendations include leveraging existing relationships, transitioning personal relationships into organizational ones, and creating educational materials to bridge the gap in understanding between sponsors and the IQP process.

Additionally, six projects were found that the PRT fully believes focus on the mission of IQP: the intersection between society and technology. From creating an online platform to help women generate autonomous income to determining the effectiveness of adaptive learning systems on a college campus, these projects are guaranteed to blend the technical expertise students learned at WPI with the social skills needed to succeed. The six projects are an excellent starting point for the new RPC director to begin their impactful tenure at the project center. It is important to note that these projects were developed eight months before they would actually be worked on, so there is a large chance that the details and scope of the projects can change.

The RPC can strengthen its operations, enhance the student experience, and develop engaging and impactful projects for future cohorts by addressing the recommendations outlined in this report. Collaboration between faculty, sponsors, and students will be key to implementing these changes and guaranteeing the RPC's success.

7.0 Appendices

7.1 Appendix A: Interview Questions to Past RPC Faculty

1. What has your experience been facilitating IQP experiences at WPI?
    a. Duration of position?
    b. How was the position acquired? (i.e., interest, volunteering, need, etc.)
    c. Quality of experience?
2. How would you describe IQP to a stranger?
    a. To someone abroad? To a sponsor?
3. How is IQP pitched to sponsors?
4. What criteria was used to select project sponsors?
5. What are the responsibilities of project sponsors?
6. How did you approach potential sponsors?
    a. Any tips for us?
7. How did you come to conclusions on projects you were interested in for the term?
8. Did you select projects based on potential student interest or impact on local society?
9. What are some challenges you have faced while working with sponsors?
10. Do you have any contacts or potentials in Morocco to help us hit the ground running when we get there?
11. What are some areas of opportunity for projects specifically in Rabat or surrounding areas?
12. Who are some sponsors in Morocco that you have worked with in the past that we could reach out to?
13. What are some things to keep in mind when searching for potential projects?

a. Things to avoid? Sponsors to avoid? What to be mindful of?

b. What is an example of a “bad” project experience?

14. As we embark on our journey, do you have any advice for us?

15. Do you want to keep your name anonymous?

7.2 Appendix B: Survey to WPI Students

Q: Do you agree to the contract?

A: Yes

Q: What year are you?

A: Freshman

B: Sophomore

C: Junior

D: Senior

E: Super Senior

F: Alum

Q: Have you already COMPLETED an IQP?

A: Yes

B: No

Q: When selecting an IQP site, how important is the location?

A: 1- Unimportant

B: 2

C: 3

D: 4

E: 5 - Most important

Q: When selecting an IQP site, how important are the types of projects?

A: 1- Unimportant

B: 2

C: 3

D: 4

E: 5 - Most important

Q: Rank the following projects based on your interest. (Less 1 - 6 More)

A: Education (ex. schools)

A: Environmental (ex. renewable energy, awareness)

A: Public Spaces (ex. libraries, parks)

A: Technical (ex. robotics, AI)

A: Infrastructure (ex. transportation)

A: Service (ex., raising awareness, collecting stories)

Q: Excluded project categories or other comments.

A: Long answer text

7.3 Appendix C: Interview Questions to Potential Sponsors

1. What are the primary goals and objectives of your organization?
    a. What kind of project would you be willing to do?
2. What is your background? Tell us about yourself.
3. What projects are you currently working on or have completed in the past?
4. Have you worked with university students in the past?
    a. If so, who?
    b. Would you be interested in partnering with WPI in the future?
5. What is your level of availability and commitment to a partnership?
    a. Would you be looking for a set duration or indefinite collaboration?
    b. What are your available resources?
    c. Do you have a workspace available?
        i. Where would it be located?
6. What would your ideal student candidates look like?
    a. What qualifications would they have?
7. Do you know of any other organizations who may be interested in collaborating with Worcester Polytechnic Institute students conducting an Interactive Qualifying Project?
8. What are the next steps for moving forward?
9. What impacts have the projects had on the targeted community? (Only ask if they have sponsored a project before)

7.4 Appendix D: Project Outline Template Example

Morocco March 2025 D Term Project Briefs

Rabat Project Center

Project A

Project Title: Engineering Curriculum with Sustainable Development Goals

March 2025 IQP

Sponsor Organization: EMSI

Sponsor Name:

Email:

Whats App:

Location:

Organization Website:

About the Organization:

École Marocaine des Sciences de l'Ingénieur (EMSI), or The Moroccan School of Engineering and Sciences, was founded in 1986 and has 18 campuses throughout Morocco, mainly in Casablanca, Rabat, and Marrakech. They offer five engineering degrees in Computer and Network Engineering, Civil Engineering/Building and Public Works, Financial Engineering and Auditing, Industrial Engineering, and Automation Engineering/Industrial Computer Science. EMSI values student life, academic excellence, and being able to directly use one's studies in a real-world environment in order to make a difference.

Project Vision and Goals:

Through various methods, the project team will collect data on the current state of EMSI's engineering curriculum and the inclusion of SDGs. They will be under the direction of an EMSI

professor. A current initiative on sustainable development for computer science is already underway. First, progress will be analyzed to determine effectiveness and impact. Additionally, benchmarking of other engineering programs, mapping of engineering vs. the SDGs, and a review of the requirements of the European Network for Accreditation of Engineering Education (EUR-ACE) will provide context for a successful and impactful curriculum. The team can also analyze adaptive learning systems (ALS), which use AI to mend to a student's level of learning. The final project deliverable will likely be comprehensive recommendations for developing and improving the inclusion of the United Nations Sustainable Development Goals into EMSI's curriculum.

Sponsor Role:

The head professor in charge of the project will guide the WPI research team in selecting the target population for their methods, including, but not limited to, surveys and interviews. This will help the team understand student perception and knowledge of SDGs and ALS on the EMSI campus. The professor will also guide the team in selecting engineering curricula to compare the present EMSI curriculum to.

Potential Research Questions:

- What are the important aspects of an engineering curriculum?
- How can UN SDGs be implemented, and how will it affect a student's perspective?

Deliverables:

- The revised curriculum of a specific department? (not defined yet)
- Is SDG implementation deliverable?

Preliminary Tasks/ ID2050 Research:

- UN SDG review: UN SDG's un.org/goals

- Engineering curriculum research
- Adaptive learning system research

7.5 Appendix E: Sample infographic about the IQP process and sponsor involvement

WPI

WHAT IS IQP?

What is WPI?

Worcester Polytechnic Institute (WPI) is a top-tier STEM-focused research university and a recognized pioneer in project-based learning. Located in Worcester, Massachusetts, and founded in 1865 on the principle that students learn most effectively by applying the theory learned in the classroom to the practice of solving real-world problems, WPI's continued mission is to transform lives, turn knowledge into action to confront global challenges and revolutionize STEM through distinctive and inclusive education, projects, and research.

What is an IQP?

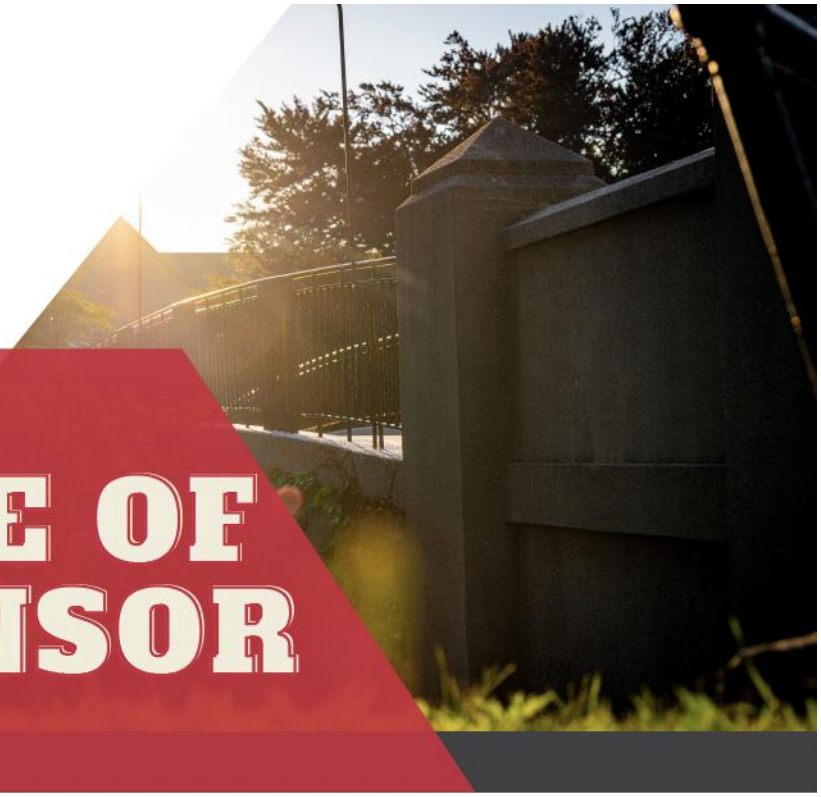
The Interactive Qualifying Project (IQP) is a junior-level requirement of all WPI students. The IQP, a project-based learning experience, was established over 50 years ago. WPI has over 50 project centers around the world that students apply to for their IQP. Here in Rabat, we offer IQPs in D-term (Early March-Early May).

The IQP is not an internship. It is a community-based research project sponsored by a local organization and completed by teams of 3-4 students. ***The students work exclusively on the project full-time, five days a week, 40-50 hours a week, over a period of seven weeks, so they are able to tackle a fairly sizeable project.***

Who Are We?

We are a team of four students from WPI hoping to network with organizations in Rabat for the purpose of developing new projects for the WPI Rabat, Morocco Project Center in the coming weeks.

WPI



ROLE OF SPONSOR

What is a Sponsor?

A sponsor develops and runs a specific IQP project based on a real-world problem. The sponsor(s) should be an expert in the field of study. The sponsor guides a team of 3-4 WPI students on completing the proposed project and provide them with the necessary resources in order to achieve their goal.

Benefit

Sponsors are able to work collaboratively with a team of dedicated college students on a real world problem of importance to their organization.

Commitment

While students are on site, sponsors are required to commit to a minimum of one one-hour meeting weekly with the WPI student project team.

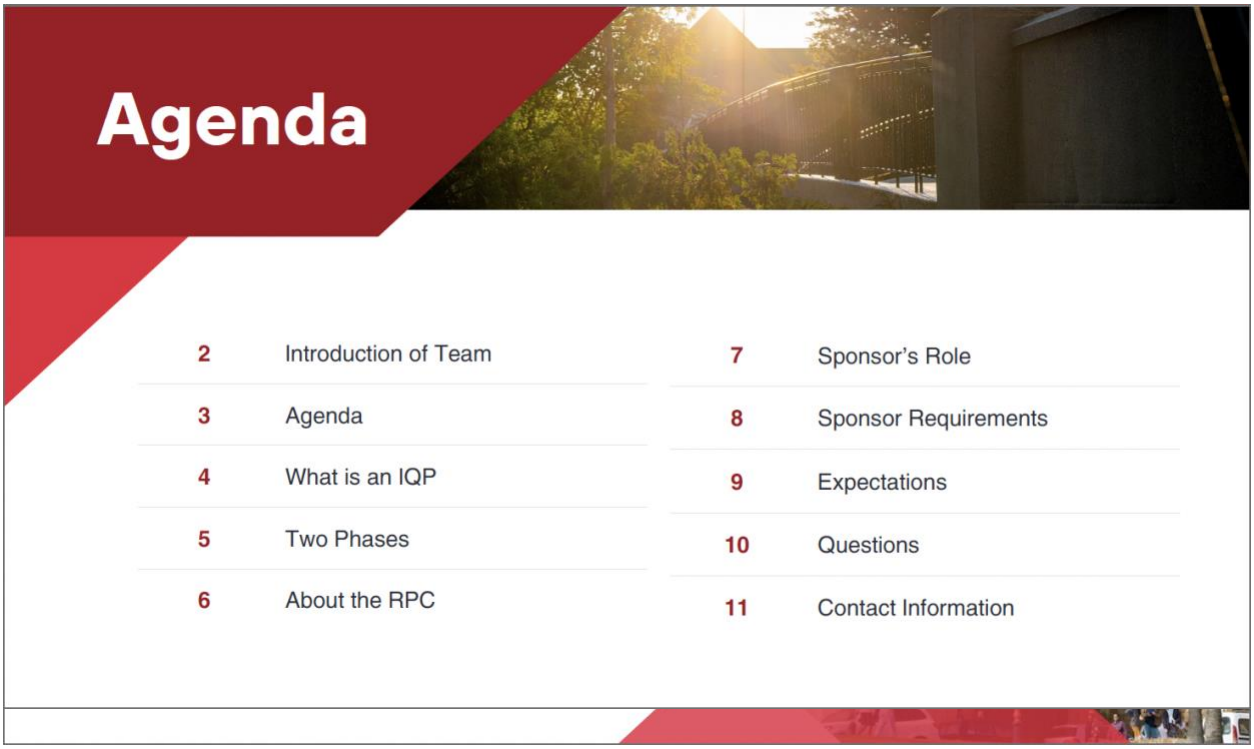
Sponsors are expected to develop open-ended research projects that allow students to discover what solution best suits their identified problem using quantitative and qualitative data analysis.

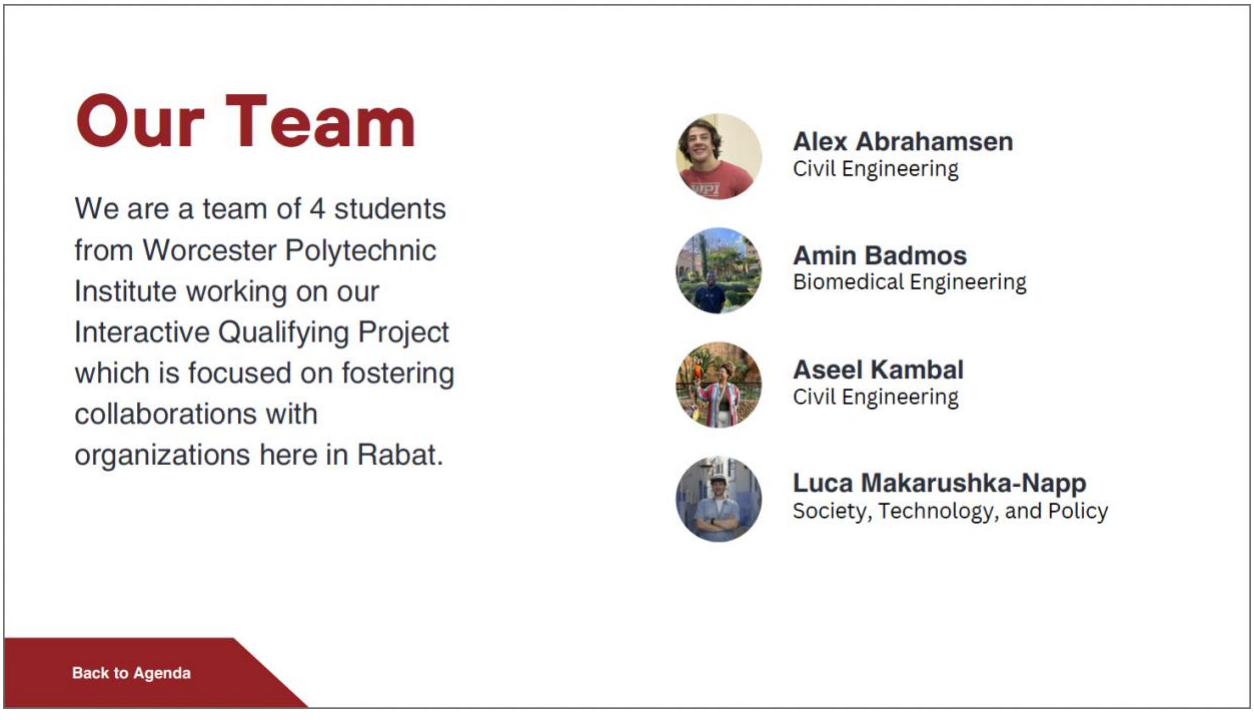
Over the course of the project, sponsors are expected to provide feedback, support, and guidance to student project groups.

GET IN TOUCH

+1 (309) 252 2895 | aobadmos@wpi.edu
+1 (256) 288-7073 | akambal@wpi.edu

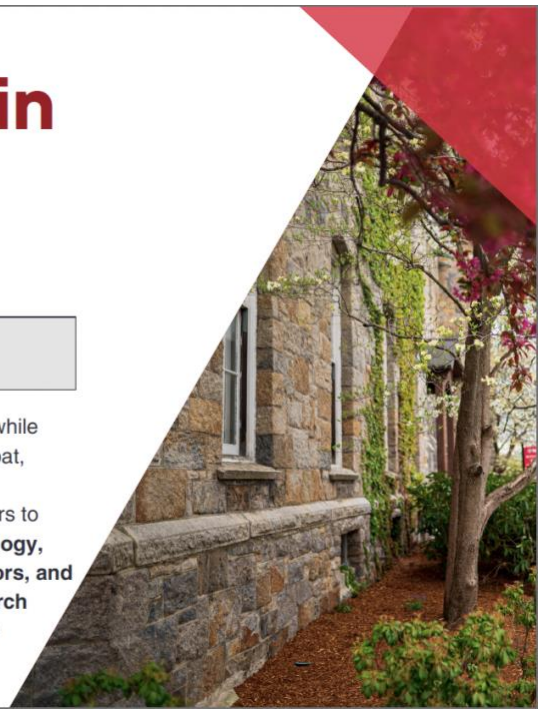
7.6 Appendix F: Sample slideshow about the IQP process and sponsor involvement





IQP is conducted in TWO Phases

Research portion, and action portion



Research

This portion is conducted while students are still in Worcester, Massachusetts, USA. The term before their on-site work with sponsors, students enroll in a course **involving a literature review and cultural research focused on the sponsor's identified real-world problem**. The goal is to create a plan of action for when the team works abroad with their sponsors.

Action

This portion is conducted while students are on-site in Rabat, Morocco. During this time, students work with sponsors to **solidify project methodology, meet weekly with sponsors, and conduct hands-on research resulting in a deliverable product.**

About the Rabat Project Center

- The Rabat Project Center was established in 2000 and has competed projects in areas such as education, water management, and sustainability.
- Previous Sponsors include; Ribat al Fath, Ibn Sina Hospital, Association Jannat, University International Rabat, and various other organizations within the city.

Sponsor's Role

- Develops and runs a specific IQP project based on a real-world problem.
- Should be an expert in the field of study.
- Guides a team of 3-4 WPI students on completing the proposed project and provides them with the necessary resources in order to achieve their goal.

Back to Agenda

Requirement

What commitments should a sponsor anticipate?

Requirement #1

While students are on site, sponsors are required to commit to a minimum of one one-hour meeting weekly with the WPI student project team.

Requirement #2

Develop open-ended research projects that allow students to discover what solution best suits their identified problem using quantitative and qualitative data analysis.

Requirement #3

Sponsors are expected to provide transportation and translation services to student groups when needed.

Expectations

- Provide a physical space for students to complete project work in.
- Be in regular contact with students. Can include email, texts, or in-person meetings.
- Be enthusiastic and passionate about potential project ideas.

7.7 Appendix G: Consent Form for Participant Interviews

Title of Research Study: Robust Rabat: Identifying New Project Opportunities

Sponsor: Kent Rissmiller

Introduction:

You are being asked to participate in a research study. Before you agree, however, 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 Interview:

For WPI Faculty:

The purpose of this interview is to learn more about the history and background of the Rabat Project Center. This can include important events, personal experiences, downfalls, and successes of the area. We would like to gain insight into how to find sponsors, speak to them, and what criteria have been used when it comes to choosing sponsors.

For Potential Sponsors:

The purpose of this interview is to learn more about your organization and how it may be beneficial to collaborate with Worcester Polytechnic Institute (WPI) for an Interactive Qualifying Project (IQP) for future WPI students. The goal is to learn more about your organization, your role, and what an ideal partnership would look like. Additionally, we would like to access your personal network and see if you know anyone else who would be willing to partake in this collaboration.

Procedures to be followed:

The research will not exceed the duration of the interview. Interviews can be conducted for anywhere between thirty minutes and over an hour. Interviews will be conducted either in person or via Zoom. Interviews will be recorded and conducted by an investigator and a willing participant. Participants will be contacted after the interview to verify all information can be used in the final study. While future interviews may be scheduled to gather additional information, they are not required for this study.

Risks to study participants:

For WPI Faculty:

There are no risks associated with this study.

For Potential Sponsors:

There are no risks associated with this study.

Benefits to research participants and others:

For WPI Faculty:

There are no benefits associated with this study.

For Potential Sponsors:

Research participants can gain potential partnerships with WPI students, which can help further their organizational goals.

Record keeping and confidentiality:

The information given in this interview will potentially be used in our final paper and presentations. If the interviewee wishes, any information they wish to keep confidential will be

kept confidential. This can include, but is not limited to, names or certain information disclosed within the interview. Consent for information given during the interview can be withdrawn at any time by contacting one of the investigators.

Records of your participation in this study will be held confidential so far as permitted by law. However, the study investigators, the sponsor, or its designee, and, under certain circumstances, the Worcester Polytechnic Institute Institutional Review Board (WPI IRB) will be able to inspect and have access to confidential data that identify you by name. Any publication or presentation of the data will not identify you.

For more information about this research or about the rights of research participants, or in case of research-related injury, contact via email:

gr-newprojectsinmorocco@wpi.edu

Aseel Kambal, Student Investigator (SI): akambal@wpi.edu

Luca Makarushka-Napp, SI: lamakarushkanapp@wpi.edu

Amin Badmos, SI: aobadmos@wpi.edu

Alex Abrahamsen, SI: akabrahamsen@wpi.edu

Michele Femsc-Bagwell, Primary Investigator (PI): mbagwell@wpi.edu

Mallory Bagwell, Faculty Investigator: mbagwell1@wpi.edu

Ruth McKeogh, IRB Manager: Tel. 508-831-6699, Email: irb@wpi.edu

Gabriel Johnson, Human Protection Administrator: Tel. 501-831-4989, Email: gjohnson@wpi.edu

Your participation in this research is voluntary. Your refusal to participate 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.

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

_____ Date: _____

Study Participant Signature

_____

Study Participant Name (Please print)

_____ Date: _____

Signature of person who explained this study

7.8 Appendix H: Definitions for Sponsor Criteria

Criteria	Definition
Sponsor Enthusiasm	Enthusiasm can be determined from inflection, talking speed, and other verbal or body cues. Includes interest in learning more about the project center, IQP, and related topics.
Sponsor Resource Support	Refers to the sponsor's ability to provide services necessary to complete a proposed project. This can include--but is not limited to--transportation, translation, a space to work, etc.
Sponsor Location Accessibility	An ideal location for a project in this center is anything that is easily accessible from Rabat. Rabat has a lot of public transportation opportunities, including taxis, trams, and trains. A sponsor that requires regular in-person meetings should not be located outside of Rabat.
Sponsor Timeliness and Responsiveness	Timeliness & Responsiveness includes how quickly and effectively the sponsor responds to email, text, and other correspondence outside of physical meetings**.**
Sponsor Uniqueness	It is in the best interest of WPI and the students working on IQP projects to have a unique experience with their project. Continuously having unique projects will help the project center grow and develop into new opportunities.
Sponsor Network Robustness	A sponsor’s network is important because it can connect the RPC to other qualified people who could be a future sponsor. If the sponsor stops working with WPI for whatever reason, they can put the RPC in contact with someone new who can take over the project or create a new one.
Proposed Project Compatibility	Projects align with the Mission and Code of Conduct at WPI. Projects should not place students in uncomfortable situations or direct emotional or physical danger. Additionally, projects should not go against the cultural norms present in the society.

Project Intersection Between Society and Technology	The intersection between society and technology is the main goal behind the IQP. Successful IQPs incorporate the technical aspect learned in the classroom as well as a social piece with a direct impact on society.

7.9 Appendix I: Table of Cumulative Sponsor Scores

Criteria	Sponsor Grades (Weighted)					
	PS1	PS2	PS3	CS1	CS2	CS3
Sponsor Enthusiasm	8	6	6	4	8	5
Sponsor Resource Support	4.5	4.5	6	3	5.25	4
Sponsor Location Accessibility	6	6	6	1.5	3	5
Sponsor Timeliness and Responsiveness	8	6	6	4	4	5
Sponsor Uniqueness	3	2	3	3	2	2
Sponsor Network Robustness	2	4	3	1	3	3
Proposed Project Compatibility	8	8	6	6	6	7
Project Intersection Between Society and Technology	4.5	6	3.75	3	3	6
Total	**44**	**42**	**39.75**	**24.5**	**33.25**	**33**

7.10 Appendix J: Sponsor Criteria and Assigned Weights

Rankings	Weights	Criteria
3	2	Sponsor Enthusiasm
4	1.5	Sponsor Resource Support
5	1.5	Sponsor Location Accessibility
1	2	Sponsor Timeliness and Responsiveness
7	1	Sponsor Uniqueness
8	1	Sponsor Network Robustness
2	2	Proposed Project Compatibility
3	1.5	Project Intersection Between Society and Technology

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