

# Developing the Website for the New Prague Project Center



An Interactive Qualifying Project Report Submitted to the Faculty of WORCESTER POLYTECHNIC INSTITUTE in partial fulfillment of the requirements for the Degree of Bachelor of Science.

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## Abstract

Our group's goal was to create an interactive and user-friendly website for the Prague Project Center to help provide information to future IQP students, their advisors, and potential sponsors.

To create a website informed about Prague and well designed, we interviewed a variety of people to gather data about Prague student life and website development. Czech students gave our team information about student life in Prague, as well as local attractions and historical locations. WPI students and professors gave us advice and a reliable format for creating an attractive and engaging website. Combining these two assessments with our team's own secondary research, we created the [Prague Project Center website](#).

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## Executive Summary

As part of Worcester Polytechnic Institute's undergraduate degree requirements, students are to complete an Interdisciplinary Qualifying Project (IQP). The IQP is a community service project that focuses on solving a problem that is at the crossroads of science and society. WPI offers their students opportunities to travel all over the world for the IQP as part of the Institute's Global studies Program, and as of 2020 Prague, Czech Republic was added as an IQP site. With the addition of this new site, the project center directors needed a website that would relay all necessary information about the project site and the projects offered there to students, parents, and potential sponsors. Our team set out to research web design and usability in order to create the most user friendly and informative website for the Prague project center. Along with research in web design, it was necessary to immerse ourselves in the history and culture of the Czech Republic in order to decide which information was most important and should be included on the site. This website aims to encourage potential sponsors to invest in the Prague Project Center by providing them with information about the project center's mission, sponsor responsibilities, and student projects. Additionally, we aim to provide students applying for IQP with relevant information about the popular culture and history of Prague, as well as tell them about the projects previously completed at the project site. This will give prospective students a better idea of what their life will be like while completing their own project at the Prague center.

With the growth of technology, all the information one could ever need is available from various websites on the internet. Our team began our research into usability, as it is a key aspect of web design. Usability can be broken down into four main principles listed by John Gould and Clayton Lewis as "(a) usability means focusing on users; (b) people use products to be productive; (c) users are busy people trying to accomplish tasks; and (d) users decide when a product is easy to use" (Gould & Lewis, 1985). Their analysis emphasizes the idea of usability testing which is described as "the process of involving users to evaluate a system to ensure that it meets usability criteria" (Corry et al, 2006). The idea of usability is centered around creating an efficient product that is easy to use and effective. Usability is respective to the intended user and what the product is designed to do. In order to keep the intended user on the forefront of our development, we created a website that was usable by people of all ages to make it effective for both sponsors and students.

Along with usability, graphic design and color theory are just as necessary in creating an effective website. The color of a website greatly contributes to the user's impression of the site. Use of lighter colors overlaying darker ones proved to be more appealing in Dahal's Study "Eyes don't lie: Understanding users' first impressions on website design using eye tracking." The layout of a website is equally as important and

is dependent on two main components, with the first being separation of content using white space. When sections of the site are separated by insufficient space, the website becomes boring and confusing to navigate. However, when correctly spaced, websites are visually easier to navigate, which creates a positive impression on its users. The second important factor is correct positioning of text, images, navigation tools, and search bars. When there is proper alignment of images and text, and the layout does not change, the website becomes familiar. This allows users to build a good relationship with the site (Dahal, S., 1986, 2011). Studies show that users prefer when content is nicely organized and straightforward, for a simpler organization and website allows for faster content loading times giving users a better experience (Rosen, D. E., & Purinton, E. 2004).

Throughout the construction of a website, constant evaluation is one of the most effective ways to ensure that the website is usable and performing as expected. One of the most used and respected criteria for evaluating a website are Nielsen's Heuristics. Nielsen's Heuristics are a set of criteria used for discovering usability problems in a user interface design through an iterative design process (Nielsen, 1994). Heuristic evaluation is focused on allowing the tester to formulate their own opinions throughout the evaluation in order to avoid any influence or bias by the creators. This type of evaluation also allows for feedback to be readily available soon after testing. The project team conducted Heuristic evaluations throughout the development of the website to ensure that the content and functionality of the website were useful and effective. Heuristic evaluation was conducted with both students and the project directors and advisor to ensure that the website was usable to any potential stakeholders. To learn more about the 10 specific principles that make up Nielsen's Heuristics visit [this page](#).

Along with research into web design, this project required the team to immerse themselves into the culture and history of Prague, as well as the entirety of the Czech Republic in order to determine what aspects were best fit to be included on the website. Secondary research was conducted to learn about the history of Prague, specifically about the Prague Spring and the Velvet Revolution which both played roles in the development of the Czech Republic. The Prague Spring was "a period of political liberalization and mass protest in Czechoslovakia" (Williams, K., 1997). During this time period, current president Alexander Dubček (1921-1992) tried to reform the oppressive nature of Soviet-style communism with liberal reforms, or as he coined it: "Socialism with a human face." Mainly pushing for partial decentralization of the economy and democratization of the nation. However, his attempts were deemed futile when the Soviet Union and other members of the Warsaw Pact invaded the country to suppress the reforms in 1968. Later, in 1989, the Velvet Revolution caused the Communist

regime's final collapse. This revolution was a non-violent transition of power that made a huge impact on the country. Accomplished through protests against the one-party government of the Communist Party of Czechoslovakia, the Velvet Revolution ended the one-party rule in Czechoslovakia. After the revolution, Czechoslovakia was established as a parliamentary republic. The Czech Republic was created on January 1, 1993, after the dissolution of the Czechoslovak federation. As a result of this separation, the federation's assets were divided at a ratio of two to one in favor of the Czechs. This peaceful separation divided the country into Czechia and Slovakia today. This information is important for anyone traveling to the Czech Republic to know, as it shows the country's fight for a fair democracy, which shapes how their society functions today. It can also provide reasons for different aspects of society in Prague. Researching and learning about the history of Prague allowed our team to get as close to being in the Czech Republic as possible despite not being able to travel due to the COVID-19 pandemic.

Learning about the culture and daily life in the Czech Republic is also important so future students are able to see what it truly is like to live in Prague before applying or arriving at the site. Using surveys and interviews with students that attend the Anglo-American University our team was able to immerse ourselves in the culture of the Czech Republic without actually being there. The surveys helped collect information to include on the food and culture pages on the website. Students answered questions about popular traditions and holidays as well as about general student life in the Czech Republic. The interviews conducted were with the student council of the Anglo-American University, allowing for our team to learn about the city from the perspective of students similar in age to WPI students. Here we learned more about traditions and holidays such as how Christmas is celebrated non religiously, and the people of Prague treat the holiday as a very big deal. The streets are filled with lights and street vendors serving fresh comforting food as well as crafts and souvenirs. The students also pinpointed some key tourist attractions in Prague such as the Prague Metronome in Letná Park and the Old Town Square, about which our team did further research and included on the website's Tourism page.

The goal for this project was to provide a website that contained all the necessary information about the Prague IQP site for students applying to the site, potential sponsors, and project directors. To reach our goal our team researched web design and immersed ourselves into the history and culture of the Czech Republic. Through interviews and surveys of both WPI students and students in the Czech Republic we were able to gain plenty of information from which to choose what was best to include on the website. Our team hopes that this website helps the Prague Project

Center grow and prosper in coming years. To view our final deliverable and to learn more about the Prague Project Center, visit [pragueprojectcenter.org](http://pragueprojectcenter.org).

## Introduction

Worcester Polytechnic Institute offers its students an extensive global studies program where undergraduate students complete community service projects all around the world, now including the Czech Republic, as part of the Institute's graduation requirements. The Interactive Qualifying Project (IQP) is a project that challenges students to resolve technical or scientific problems in the context of their social and humanistic setting. This alternative to studying abroad forces students to explore new cultures in order to better understand the people they are sent to serve with the technical and engineering skills they have learned at WPI. Project site directors are constantly looking for the best way to present information about their site and oftentimes websites are created to display everything a site has to offer, including the history and culture of the country and what types of projects are conducted at the project site. An effective website must contain a selection of the correct content for it is easy to make a website too complex and hard to navigate. The focus of a website should be based on the idea of usability, which consists of focus on the users, emphasis on ease of use and navigation, and creation of a productive website allowing for easier completion of tasks.

Knowledge about the city, its people, and its past is crucial for completing a human-centered project like the IQP. Since the Prague Project Center is in its inaugural year, this project seeks to lay the foundation for future project work by making students aware of Prague's famous history and culture. This website includes crucial information about daily life of a student living in Prague by displaying information regarding the city such as the necessary cultural knowledge (daily customs, public transportation, holidays and traditions, etc.), information on food and transport, and what student life in Prague is like. Links to the web pages of all projects done at this project site will also be available to show users what types of projects are done at the site and to provide additional information on topics of interest to those visiting Prague. The inclusion of the previous projects is also intended for potential sponsors to learn more about WPI's IQP program and see how these projects may be able to help them.

The following report discusses the steps taken by this team to develop a website that displays the historical and cultural attractions to prospective Prague Project Center applicants and tells them about project opportunities. The website must present the content of this famous Bohemian and Czech capital in a manner that captures the essence of both its rich cultural past and its vibrant present for example, providing people with information on how the Prague Spring and the Velvet Revolution impacted the government and society in the Czech Republic.

Without first understanding effective website design, it would be difficult to create an easy-to-use, engaging site that displays this information in an effective way. The

project team researched principles of web design and conducted interviews to determine the best elements of user interface. This helped the team create a product that presented the necessary information in the most useful and interactive way. The Project Center directors need a coherent, easy-to-navigate website that is aesthetically pleasing and full of information. Research in web design, graphic design, and user interfacing allowed our group to incorporate the best practices of website building into our site. This research, along with the survey data we collected, and the information we gathered from the interviewees helped us better organize and construct a user-friendly website. This project was guided by scientific evaluation of website design using Nielsen's Heuristics and by the preferences expressed by WPI's students and the project sites advisor and directors.

The goal for this project was to create a website that would serve as the infrastructure for the Prague Project Center, displaying all the crucial information for students, Project advisors and potential sponsors. Our research in website design helped us determine the best way to format our website in order to maximize helpfulness while making it user friendly and full of information. Additionally, surveying and interviewing students and teachers from the Czech Republic gave us information about popular culture and student life in Prague, helping us determine what content was most important and was to be included on the website. The website is intended to serve as a strong backbone for the Prague Project Center to grow and flourish in the coming years.

## Background

This chapter presents our research into website design, website analysis, usability testing, and the content of our website - the culture and history of Prague. After establishing the best practices in designing websites, we explain how to properly analyze them with a site comparison. Next, we explain the importance of usability testing through relevant case studies. Finally, we provide a brief summary of the website's content, including Prague's culture and history, and we explain why each of these aspects are important for our stakeholders to know about.

## Website Design

Website design is like building a house. Before we start construction, we consult an architect, inspect building codes, and oversee a survey of geological licenses. In web design, we make a plan, review code documentation, and verify our server before starting the process. Web design includes several different aspects, such as content production, webpage layout, and graphic design. Websites are created using HTML, or hypertext markup language, JavaScript (JS), and cascading style sheets (CSS) (Christensson, 2013). The HTML is like the frame of the house because it creates a structure that can be built upon. The HTML holds the content of the website, which is then styled by CSS. With CSS, page color, text orientation, font style, and just about anything about the page can be altered. However, at this point the website is still missing a key element, JavaScript. JS allows functionality, interaction, and responsiveness on a website. User feedback can also be received through forms created in HTML, which are made functional by JS. It is important to make these forms dynamic, meaning that they can be easily modified.

A website was the best possible way for us to relay key information to prospective IQP students of the Prague Project Center. The essential features of a website can be created rather quickly and are immediately available to anyone with its web address. Websites are also very useful for sharing information and resources. Therefore, we can communicate necessary historical and cultural information to students going to Prague, as well as information about the Interactive Qualifying Project to potential sponsors in Prague.

## Interactivity

Having interaction between the client and the server is key to making an engaging website. For example, when a user clicks on the navigation bar of a website, they expect to be taken to a new page. Interaction is typically done through JavaScript, as it is designed to "beef up web pages with interactive features." There are many ways

to create an interactive website, which all include functions. JavaScript functions are defined as “series of code instructions you group together and give a name” and are almost always utilized by web developers because they condense code for faster run time (MacDonald, 2011). Some of the many features that can be utilized through dynamic design using JavaScript are: image rollovers, collapsible text, and interactive forms. The two segments of interactivity we focused on are user engagement and interactive media forms.

User engagement determines whether or not users find significant value in a website. Engagement is measured by multiple combinations of activities such as clicks, downloads, and shares. Having active users is helpful, especially when developers need to determine what aspects of the website are being utilized the most. These features give the developers a basis to interpret how their stakeholders interact with the website, as well as their frequency on different pages. This data gathered on engagement can be utilized as constructive feedback without the need to do surveys, which saves crucial time and energy.

The key element for successful user engagement is having a focus on the end user of the website. It is important to follow document design guidelines, which have the sole purpose of “making life easier for the reader” (Geisler, 2013). In “Designing for user engagement on the web: 10 basic principles,” Geisler explains that these guidelines were created in the early 1980’s, but they have been modified in later years to include topics on audience analysis, usability testing, and techniques to produce documents. We implemented these guidelines, which helped us achieve our objective of maximizing the site’s helpfulness for our stakeholders.

The “engagement” of internet users is often associated with the “social web” (Geisler, 2013), which describes the internet as a social space, rather than an informational one. As Geisler states, there is a desire to transform this informational content into a “rich communication and interactive environment” to boost engagement. With social design, there is a focus on utilizing the web as a tool to accomplish real world tasks. Web design has become even more social since the development of major social media platforms. This fact drives the point that the web is meant to satisfy its user’s social needs while also maintaining efficiency and accuracy. Social design focuses on all users, and the diversity among them. Designing socially means that all aspects of all users are considered in the design process, specifically focusing on their engagement with others. This stimulates social interaction, which encourages users to remain active on the site.

Interesting and engaging media is important with any website, because it makes the user more involved. There are many well-known methods of delivering this media, such as pictures, video, audio, etc. However, there are also some lesser-known methods that can be used to deliver content in creative ways, such as web maps. Maps may seem like a fairly standard way of conveying data, but utilizing map layers in unique ways can provide a more engaging and informative experience. Most maps can change dynamically depending on many usage factors, including zoom level. This phenomenon is called “variable granularity of content” (Avouris & Finotti, 1993). This type of map presents trends at the most external levels and shows more specific information as it is zoomed in. An interactive map allows for many levels of information to be displayed without being overwhelming, while following an intuitive structure. This type of map is useful when portraying information about different regions around a city, which allows for more information to be given from a single format.

## **Graphic Design**

In order to create a good first impression on our users, we need to have an aesthetic and simple design theme. When a site is more visually pleasing, it will be easier for a user to utilize and create a positive relationship with it. In order to achieve this, our website was created around a user-centered design as opposed to a content-centered design.

For example, the color of a website greatly contributes to the user’s impression of the site. Use of lighter colors overlaying darker ones proved to be more appealing in Dahal’s Study “Eyes don’t lie: Understanding users’ first impressions on website design using eye tracking.” Additionally, contrasting colors such as blue and yellow help make text easier to read. For example, pink text on a red background might be more difficult to read than black text on a red background. The use of contrast can also allow for a visual hierarchy, which highlights the importance of certain texts over others.

The layout of a website is dependent on two main components, the first of which is the proper spacing of content. When sections of the site are separated by insufficient space, the website becomes boring and confusing to navigate. However, when correctly spaced, websites are visually easier to navigate, which creates a positive impression on users. The second component is the proper formatting of text, images, navigation tools, and search bars. When images and text are properly aligned, and the layout is static, the website becomes familiar for the users. As a result of this familiarity, the user becomes encouraged to explore further into the website.

Simple aesthetics are commonly utilized in modern website themes. Studies show that users prefer when a page’s content is nicely organized and straightforward.

This organization can be achieved through the use of proper design techniques. These design techniques were created by experts in the field of graphic design, Rosen and Purinton, to enhance the user experience. Maintaining a simple design decreases content and load time, giving users a better experience with their interactions with the website. The aforementioned layout techniques above contributed to our ideal and simple design. (Rosen, D. E., & Purinton, E. 2004)

It is also important to know what to avoid when designing a website, as many design choices can contribute to a negative user experience. For example, images on a site should have meaning and clear purpose on their page. When there is no clear reason for a page image, or there are too many images on a page, users can become confused. Since one of our objectives is to maximize usefulness while maintaining a user-friendly website, we kept content relevant, organized, and properly formatted.

## **User Interface**

The user interface is the portion of the website where our stakeholders interact the most. Therefore, it is important to have a clean, easy-to-use interface. The user interface has two main parts, navigational components and informational components. The navigational components should be clean, require few clicks, and build a sense of familiarity, while the informational components should be clear, concise, and easy to read.

## **Navigational Components**

The Navigation of our site was designed to be simple and intuitive. Necessary components to achieve this are: accurately labeled navigation buttons, identifiable pages, and clear site direction. To follow a consistent navigation pattern across the site, in-site search engines can be implemented on a local search bar. The site uses primarily one form of navigation to maintain a simple design. When a website has too many navigation menus, users will get lost, creating a negative association with the site (Gehrke, D., & Turban, E. 1999).

Additionally, reducing the page loading time is one of the main priorities for effective websites. To minimize load time, the website should limit large content, and use compression algorithms to reduce the size of files (Shen, Obit, Alfred, Tahir, 2016). The most common way to reduce loading time is to limit the number of images on a site. Every image needs to be loaded when the page is visited by a user, meaning that having fewer images creates shorter load times. Using few images can also be combined with image compression, which reduces image size by around 80%.

To get a good understanding of the factors that affect a user's impression of a website, we can refer to Herzberg's Two Factor theory. Herzberg's theory is used to describe job satisfaction and dissatisfaction through different work factors (F. Herzberg, 1966). For example, one of Herzberg's factors of a job is "Working Condition" or a hygiene factor. By this he means the working environment, including things such as the lighting and temperature. The other factor is known as a motivator and are things such as time and a half for working extra hours. For example, translating a worker's impression of his workspace into web development, we can relate that to a user's first impression of the website (Ping Zhang, Small, R. V., von Dran, G. M., & Barcellos, S. 1999). Translating Herzberg's factors served as a reference on how to create certain components of our website and what to avoid doing.

## **Informational Components**

Informational components are the most essential part of a website, as they contain all of the visible data. There are several main components, including image descriptions, a site map, the home page, and contact information. These elements are essential to every website and each have their own set of rules to make the website as intuitive as possible.

The content and layout of a homepage are crucial for a positive user experience, which should be the goal of all user interaction. Therefore, no matter how well written or beautiful the content on the page is, if it is unreadable it will not please a user. The best way to ensure a readable page is by using dynamic and responsive content structures, the most prominent of which is fluid grids.

Fluid grids are a way of managing content and white space on a page using structures which range from a few simple columns, to a much more complex grid with many boxes (Figure 1) (Sharkie & Fisher, 2014). These boxes, including the content within them and the white space between them, change with regard to the device and browser they are being viewed from. Using grids ensures that the website will be accessible on many devices and across multiple browsers, increasing the number of possible users.

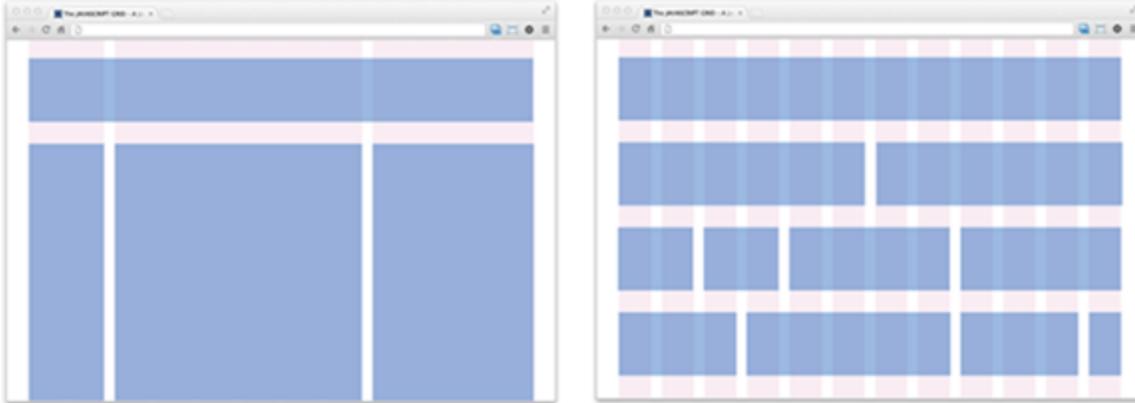


Figure 1: Simple vs Complex Fluid Grids (Sharkie & Fisher, 2014)

A good website must contain a functional site map. The site map guides user navigation and displays how each page is interconnected. It is important that the number of clicks to get from one page to another is reduced as much as possible (Richardson & Thies, 2012). Reducing the number of clicks can be done by creating a well thought out site map prior to any actual web development. Each element of the site map should include a page title, which is connected to other pages accessible from within it (Richardson & Thies, 2012). The map provides a visualization of the website structure and can help ensure easy navigation from one page to another.

All websites available through search engines such as Google or Bing show results of a search by looking for keywords in a website's description. The website's description is a short paragraph provided by the website developer to assist people in locating their website. The description and contact information elements are important because if used properly, they can bring increased user traffic to a page.

Another key element to all websites is a contact page. A contact information page is not essential to every website but is useful in contexts where the user might want to get in touch with someone connected to the website. Having one for the Prague Project Center website was essential as the design team will graduate soon and it is essential that stakeholders are provided with accurate and recent contact information.

## Case Studies

We analyzed two case studies focused on web design and user satisfaction, with an intention to review improvements on existing websites. We utilized this information to assist us in creating an informative and aesthetically pleasing site. These studies examined the importance of usability and presented feedback from users. We utilized what we gained from this study to determine what elements were most important from our stakeholder's point of view.

## **User-Centered Design and Usability Testing of a Web Site: An Illustrative Case Study**

As use of Worldwide Websites began to grow, administrators at Indiana University at Bloomington recognized the pivotal role of their website in recruiting new students to the university. An interdisciplinary team consisting of faculty, graduate students, and other staff set out to analyze the usability of their current website in an attempt to find further improvements that could be made in order to increase interest (Corry et al, 2006).

This project was centered on producing a useful system based upon the four principles stated by Gould and Lewis. These principles are listed as “(a) usability means focusing on users; (b) people use products to be productive; (c) users are busy people trying to accomplish tasks; and (d) users decide when a product is easy to use” (Gould & Lewis, 1985). Their analysis emphasizes the idea of usability testing, which is described as “the process of involving users to evaluate a system to ensure that it meets usability criteria.” Usability is evaluated by the intended user and in terms of the value of the product they receive (Corry et al, 2006).

It is clear that when designing a website, it is very important to keep the intended user in mind. In designing our website, usability was one of the main priorities. This specific study found that when the focus of the website was on usability it proved to be much more useful, which was determined by the increase of online traffic and page visits. This case study provides us with many important details to consider when designing an easy-to-use, interactive, and efficient website.

## **E-Satisfaction of NTO's Website Case Study: Singapore Tourism Board's Taiwan Website**

This study was done in order to examine the satisfaction of Taiwanese consumers in regard to the National Tourism Organization (NTO). The research specifically regarded the NTO's overseas office's marketing efforts and adoption of Singapore Tourism Board's (STB) Traditional Chinese (TC) website. The NTO's main website is targeted at international travelers visiting Taiwan with the goal of giving them key information that prepares them to go abroad.

The researchers used an online questionnaire located on the STB Taiwan's website homepage, where they received close to 300 usable responses. Interaction with websites like this are often crucial in winning a traveler over when advertising a tourist destination. In this study, the researchers intended to: develop an e-Satisfaction model for NTO; determine the factors related to website satisfaction; investigate features

preferred by users of the website; and see if there was any association between NTO's website satisfaction and prediction of consumer arrivals (Kao et al, 2005).

The findings of this study are helpful in creating the Prague website, specifically because tourist information is similar to the types of information needed by prospective students. The NTO's determination to increase traffic for STB Taiwan is similar to our goal of increasing interest in the Prague IQP center. Their initial findings were about which content users were interested in the most. This team found that the information desired by most travelers pertains to transportation, maps/directions, and accommodations. Additionally, they found that the quality of the information contributed towards website user satisfaction more than the actual system's quality. Lastly, they concluded that the website satisfaction was positively associated with user intentions to revisit the website and recommend it. (Kao et al, 2005).

## **Website Content**

The content on the website provides students with knowledge on Prague's culture, history, and politics, as well as information on past projects. We utilized the methods described above to display this content in the most user friendly and aesthetically pleasing manner. Additionally, we collected some of this content from students in Prague through interviews and surveys, which we discuss further in the Methodology.

It is of utmost importance that students in their IQP have a cross cultural understanding of the peoples they are sent to serve. Since IQPs are essentially community service projects, the students participating must be able to understand and empathize with the people they are seeking to assist in order to be able to serve them effectively. We included information on the culture and community of Prague from students who attend university there in order to relay this important perspective. It is especially valuable, because it is almost impossible to gather a cross cultural understanding without a first-person point of view. For example, watching a Prague puppet show in person on cobblestone streets surrounded by students from Charles University is different from reading about Czech puppets on the web. Getting the first-person perspective on the life of these students in Prague helps our stakeholders better understand the unique lifestyle they live when they arrive in Prague as students or faculty. This helps prospective IQP students get a better idea of what life will be like when they are a student at this project site.

## Culture

It was important to lay out the basic aspects of the popular culture of the Czech Republic on our website content and provide information that is essential for prospective IQP students to know. Our goal was to effectively display the aspects of this culture as a reliable and easy to use resource through our website. The customs and beliefs of a country provide background and context to its history. Some aspects of culture are food, significant landmarks, religious buildings, language, and traditions. In Prague, these aspects are all tied to its history.

When traveling around the city, it is likely that you will see the Prague Metronome, the Charles Bridge, or one of the many religious buildings in the city, such as St. Vitus Cathedral. These well-known structures have become major cultural landmarks. Religious buildings are particularly interesting because, while there are many of them in Prague, most people consider the Czech Republic to be a non-religious country. Interestingly, unlike other post-Soviet countries in the region, Prague saw a decrease in the number of people participating in religion after it left Communism. Today, modern Czech identity is largely and intentionally secular (Nešpor, Z. 2010).

Traditional food consists mainly of meats, potatoes, onions, and preserved vegetables (Czech cuisine). This type of cuisine arises from the long winters without produce and thus it was difficult to make fresh meals. Soups, sauces, and dumplings are also common forms of traditional food. In Prague, beer is the most popular drink in the country, and many traditions revolve around it.

The most prominent religion in the Czech Republic is Christianity, however in today's society the Czechs are some of the most non-religious peoples in Europe. This is most likely due to the secularization arising from decades under Soviet communism. However, they still celebrate some religious holidays. One example being St Joseph's Day, which is similar to the celebration of St Patrick's Day in the United States. This event is a similar but more subdued celebration which takes place in late March. Another holiday is the Burning of the Witches, which takes place on April 30th. On this day, Czech citizens build bonfires and burn "witches" made from straw. The legend focuses on one witch who didn't like warmth, so she created winter. According to tradition, the Czech people burn straw witches in early spring to prevent the return of the winter. People in the Czech Republic also celebrate traditional Christian holidays such as Christmas and Easter.

Along with common holidays, Czechs also follow well established social practices. For example, it is expected for people to take off their shoes before entering

someone's home. It is also considered rude to point your index finger at a guest (Dine, T., & Driehaus, P., Kristyna. 2012).

## **History**

The general history of the Czech Republic provides future IQP students with a base of knowledge for their own projects, which they can utilize when they begin their research. These sources of information on the Czech Republic's key historical events will be relayed to students in a simple, easy to understand format. Prior to its democratization, the government of Czechoslovakia was under Soviet communist control.

One of the most well-known modern historical events is the Prague Spring, which was "a period of political liberalization and mass protest in Czechoslovakia" (Williams, K., 1997). During this time period, the current president Alexander Dubček (1921-1992) tried to reform the oppressive nature of Soviet-style communism with liberal reforms, or as he coined it: "Socialism with a human face." Mainly pushing for partial decentralization of the economy and democratization of the nation. However, his attempts were deemed futile when the Soviet Union and other members of the Warsaw Pact invaded the country to suppress the reforms in 1968.

The Velvet Revolution in 1989 followed similar anti-Communist reform in the Soviet Union, causing the Communist regime's final collapse. This revolution was a non-violent transition of power that made a huge impact on the country. Accomplished through protests against the one-party government of the Communist Party of Czechoslovakia, this revolution ended the one-party rule in Czechoslovakia. After the revolution, Czechoslovakia was established as a parliamentary republic.

The Czech Republic was created on January 1, 1993, after the separation of the Czechoslovak federation. As a result of this separation, the federation's assets were divided at a ratio of two to one in favor of the Czechs. This peaceful separation divided the country into Czechia and Slovakia today.

As indicated by its name, the Czech Republic is a democratic government where "supreme power is held by the people and their elected representatives, and which has an elected or nominated president rather than a monarch." (Oxford University Press, n.d.) The electoral system is one of universal direct suffrage, and there are many prominent political parties. We learned about this and many other things during a discussion we had over Zoom with ex-Ambassador Basora. Including the fact that this democratic system is now threatened by authoritarian pressures, which arise from the

influx of immigrants, economic difficulties, and a resentment of European Union regulatory laws.

## **Projects**

Another section of our website content was built to include information about past projects, like the “Enhancing Awareness of Democracy in Czechia” and “Promoting Prague Puppetry” projects which were worked on concurrently to ours, as well as allowing for future projects to be added. Here, we include the link to each of the project’s websites, their summary, and title on our *Project Directory* page. This section of the website gives its users an idea of the current issues that the Prague project site is aiming to solve and illustrates the type of work being done in Prague by WPI students. Since future students may not have any expertise in web design, it is essential that uploading projects is user friendly and maintains the aesthetic.

This chapter displays our research into website design, website analysis, usability testing, and the content of our website. Our research was a key element in ensuring that our website relays information efficiently to the intended audience. After we established the best practices in designing websites, we determined how to properly analyze them with a site comparison. This helped us develop the theme and functionality of our website. This research also influenced the methods we took in order to collect first-hand sources on web design and the popular culture of the Czech Republic. Overall, the research we did helped make the Prague Project Center website into a fully functional and user-friendly final product.

## Methodology

For the prospective IQP students at WPI, it is valuable to understand the basic history of their Project Center. This gives them context about the current state of the country where they do their project will help them connect with local people. In order to portray a concise and current account of life in Prague, we interviewed students living there about their experiences. All the information we gathered has been summarized and is located on the website under the “culture” section.

To find information on the modern history of Prague, we researched articles and first-hand accounts of recent major Czech historical events. The first-hand accounts were located in documentaries and published materials relevant to the current era. We also gathered information about cultural practices and contemporary national politics shaping life in Prague today.

To gain insight on how WPI students use and evaluate current Project Center websites, our group utilized interviews and surveys to learn about the unique perspectives from students at Worcester Polytechnic Institute. We also interviewed matriculating students in Prague through Zoom about their activities in and impression of Prague. These interviews helped us ensure that our website had relevant and accurate information about Prague.

Interviews are a good way to gain knowledge on first-hand experiences and opinions. These first-hand experiences and opinions are not always easy to find in other sources, because they often contain non-specific and irrelevant information. From our interviews, we gained knowledge about attractive and enticing web design as well as perspectives on student life in Prague. We also used interviews to gain constructive feedback from prospective website users.

We chose to interview three groups of people: WPI students, WPI faculty, and students in the Czech Republic. These groups provided us with a diverse set of viewpoints on the website building process as well as the content on the pages. We asked WPI students Casey Gosselin and TJ Cooper about the website building platforms they used (Appendices A & B), as we wanted to get advice from the designer of other project center websites on the platforms they chose in order to make a more educated decision about the platform we used to build the Prague website. We interviewed WPI faculty member Rodica Neamtu as she has experience in both web design and as an IQP site director. We learned from her extensive experience in designing websites and the principles she used and taught (Appendix C).

Our goals in interviewing students in the Czech Republic were focused on their social lives in Prague and some elements of Czech culture that would be important for American students to know before arriving. We interviewed a group of students from the Anglo-American University in Prague to learn about their favorite places and aspects of the city as well as elements of Czech culture that they thought were most important for us to pass on to WPI students (Appendices E).

Surveys have broad capabilities and can be distributed easily. Additionally, surveys are a reliable way to collect a wide variety of data and responses that are often unobservable (Bhattacharjee n.d.). Our team sent out two surveys, one to students in Prague about their weekly activities, and one to students at WPI to gain their opinion on other IQP websites. We used these surveys as a means of accessing information in the most efficient manner. To make our surveys as effective as possible, we maintained a small number of close-ended questions to encourage quick responses.

We focused the survey for WPI students on what elements of IQP websites they found most useful when applying to IQP sites. These responses were gathered as we wanted to know what students were looking for when viewing a project center's website. The survey of Czech students was focused on the quantitative aspects of their life: asking about their social lives, methods of travel, dining culture, etc. (Appendix H). The questions we asked were focused on the budget while doing these activities and how often they did the activities, like how often Czech students hung out with friends. These questions were asked to gain information on some of the observable aspects of Czech culture that we were not able to obtain firsthand.

We worked with the project sponsors, which in our case are also the Prague Project Site advisors, on the website features and design. In our initial meetings, we discussed the features they were looking for, which we then used to create four different website wireframes. We then met to review the individual wireframes, and from their critiques, create a final wireframe that had all of the best elements of the previous four. These wireframes allowed us to begin the formal website design. We then continued to meet regularly and iterate on the final website design, continuously updating the webpage.

## Results

We believe our website is user friendly, aesthetically pleasing, and informational. To get to this point however, we needed to gather crucial knowledge about website design, as well as content material about Prague culture and Czech student life as explained above. We did this through a series of surveys and interviews, which the results of are discussed below.

### Casey Gosselin Interview

We conducted an interview with Casey Gosselin, a student at WPI whose IQP involved creating a website for Glacier National Park. This interview gave us a perspective on various web development platforms. This semi-structured interview allowed us to speak casually with Gosselin and ask follow-up questions for more clarity. Through this interview, we were able to gain insightful information on building websites using WordPress, as well as learn about some of the useful plugins Gosselin recommended. From learning about all the features WordPress has to offer, we decided it was the best platform for us. (See Appendix A)

### TJ Cooper Interview

We conducted an interview with TJ Cooper, a student at WPI whose IQP involved creating a website for the Bucharest Project Center. This interview helped us gain information on development techniques and user focused design. Cooper spoke to us in a casual manner, and the interview was carried out like a conversation. Utilizing a semi-structured interview format gave us a better opportunity to develop a full understanding of Cooper's knowledge on design. This interview provided us with ideas about and aspects of web design and user interfaces that we did not know about, and it encouraged us to further our research (Beebe, 2014). TJ Cooper provided us with his knowledge on best design principles leading to further research. With this information, we were able to design a user friendly and engaging website. (See Appendix B)

### Rodica Neamtu Interview

Professor Neamtu is an Associate Teaching Professor in the Computer Science Department at WPI. Professor Neamtu earned her BS in Computer Science and Electrical Engineering at the University of Craiova in Romania, where she later received her MS in Computer Science. Further on in her career, Professor Neamtu continued her education, gaining a PhD in Computer Science at Worcester Polytechnic Institute. As the Co-Founder and Co-Director of the Bucharest Project Center at WPI, Professor

Neamtu has had a great deal of experience with IQPs and is well informed about high quality web design.

The takeaways from this interview were the importance of Nielsen's Heuristics evaluations and wireframe construction (Nielsen, 1994). Nielsen's Heuristics are a set of criteria used for discovering usability problems in user interface design. This evaluation encourages consistent feedback on web design practices to help enhance user experiences. When reviewing other IQP websites before constructing ours, we used Nielsen's Heuristics to evaluate them. From this evaluation, we determined which aspects of each website were beneficial and which were detrimental to the user experience. We used this information as a baseline for which elements we wanted to include in our website's design. (See Appendix C)

## **WPI IQP Website Survey**

We surveyed WPI students who have gone through the IQP application process already to gain information about their experiences with other project websites. To ensure our responses allowed for proper analysis of these websites, we asked the students if the website of their chosen Project Center influenced their choice. We also made sure to include a question on the information available on the website, and its helpfulness. We asked ordinal questions about the design and navigation of the website to help us gather as much data as possible.

The data we gathered from this survey helped us to create the most user-focused design based on properly designed IQP websites. To do this, we simply went through the survey and found the most popular response from each question. We had three categories: design, information, and interaction.

For the design evaluation, we reviewed the top eleven websites according to the survey data, as all but one were tied with 4.5%, other than Costa Rica's website which was 9.1%. Since there were a lot of websites tied, we identified the common and aesthetically pleasing design attributes among all the websites that we reviewed. It became clear that some features we should include were: a large header image, bold titles for sections to make them stand out, and a simple color scheme.

For the information evaluation, we reviewed the top three websites, as these responses were less split. These were Cape Town (18.2%), Bucharest (9.1%), and Melbourne (9.1%). We read through the *Home*, *About Us*, and *Project* pages of each project center's website and found the similarities and differences. We then determined the strengths of each website and their weaknesses. Some of the weaknesses we found were improper spacing, confusing wording, and lengthy boring paragraphs. We

ensured our website would display all content in a user-friendly manner, and that any information we put on it would be short, concise, and easily understood. Simplicity was also a major factor in ensuring that our website could be easily translated and understood in other languages, as future sponsors may not speak English. Some strengths we found were proper captions, descriptive headings, and including references and resources in the form of links to be easily reviewed. On our website, each image is next to a paragraph that relates to it, and the content flows in a way that makes sense to the user. We created sections with properly labeled titles, as well as other headers within pages that provide context for them, such as on the history page where we display a documentary on the Prague Spring with its respective title. Finally, we included several links to our references which can be seen on all the images, as well as in the “food” section, “tourism” section, and home page.

In our evaluation of the interaction on the IQP websites, we had eight project centers with 4.5% of the evaluation (Bucharest, Copenhagen, Cuenca, Melbourne, Panama City, Thessaloniki, Tirana, and Venice) and one project center was at 18.2% (Cape town). We looked through all nine websites and performed several tests on them using Nielsen's Heuristics. For example, one of Nielsen's Heuristics is that the website should always keep its users informed about what is going on. The website should provide appropriate feedback as well, within a reasonable amount of time. A good example of this is that when you click on the home button on each of these websites, it takes you to the home page. When this happens, the action the user takes gets a response, and the user is pleased with the website's performance. We found that this was a good evaluation for page links, in-text citation links, buttons, and images. Our evaluation was the same for each heuristic going forward, and we determined a score out of 10 for each website, with each heuristic being one point. When we came upon the top three (Cape town, Venice, and Copenhagen) we did as we have for the other evaluations, and compared/contrasted elements from each site, determining what features would create the best user experience. We concluded that these features: proper site navigation/navigation bar and animations/visuals were the most important to ensure positive user engagement. We evaluated our website's navigation multiple times, moving from a traditional style, to a dropdown, and then settled on a combination of both. This re-evaluation was crucial in making our website the most user friendly and accessible it could be. Finally, we added several visuals to the home page and culture sections to make it more eye catching and encourage users to explore further. This technique can be seen in our animated images on the home and food pages, as well as in our video on the history page, interactive map, and other images and animations throughout the site. (See Appendix D for survey questions, see Appendix G for survey results)

## **Anglo-American University Student Council Interview**

We gathered information from students at the Anglo-American University (AAU) in Prague to help understand their perspective and daily experiences as students. Our group connected with the members of the student union at AAU for a Zoom interview. In this interview, we gathered qualitative data and asked open-ended questions to allow the Czech students more freedom in their answers. Allowing for open-ended responses also gave us the ability to ask follow-up questions and have a stimulating conversation (DiCicco-Bloom, B., & Crabtree, B. F, 2006).

From this interview, we gathered information on Prague's culture and local attractions, as well as the logistics of daily life. The knowledge we gained from this interview helped us greatly in enhancing our website's content. For example, we added two quotes from AAU student council members to the home page of our website. We also combined the information given to us from all the participants' descriptions of holidays/traditions such as Christmas in the "culture" section of the website. The students in the interview provided a lot of key information, pointing out major landmarks as well, such as Letná Park, the Old Town Square, and the Prague Metronome. The interview maintained a very casual tone, which allowed the students to go into detail with their responses. This interview gave us wonderful insight into their daily lives and helped us achieve an informative and easy to understand summary of Prague's popular culture from a student perspective. (See Appendix E)

## **Anglo-American University Survey on Student Life in Prague**

The survey we distributed to students at AAU was used to gather quantitative and qualitative data on their lifestyle and habits. This includes information about budgeting, travel around the city, places in the city, etc. These surveys helped us provide key information on our website that will give prospective IQP students a realistic expectation about their time in Prague. In order to get the most valuable data out of these responses, we tried to avoid open-ended questions. Asking close-ended questions allows for faster scanning of the information provided, which saves time and is more efficient.

We utilized this survey data to determine what content would be included in the "tourism", "food", and "culture" sections of our website. For example, we gathered that on average, most Czech students prepare most of their meals at home. Therefore, we included several traditional Czech recipes in the "food" section on our website to allow for future Project Center students who visit the website to review their options, as it is most likely they will prepare most of their meals in Prague. Additionally, we gathered other general information, such as how much money the Czech students spent on

average per week on social activities, as well as on food. We included this content as data points on our website under the FAQ section for prospective students. Including this data will help them plan out their budgets. Finally, we gathered the AAU student's personal opinions on their favorite restaurants and places to visit in Prague. We added this into the tourism section of our website, as well as to the food section. These recommendations provide prospective students a basic idea of where the best spots to visit are, which will help them dip their toes into the culture of Prague.

Overall, the data we collected through surveying and interviewing various groups helped us make the website informative and interactive. From each of these interviews, we gained knowledge about different web design theories as well as student life and popular culture in Prague. The surveys and evaluations we performed on other IQP websites were helpful, as it allowed us to create a basis of criteria, we knew would please our stakeholders. The website's content directly benefits from the perspective into student life we gained from our interview with the AAU student council, as well as from the survey data we gathered from the students at AAU. Additionally, the topics in web design we were introduced to, as well as those that we researched individually helped us ensure that the design of our website is aesthetically pleasing to our potential users. These interviews, surveys, and evaluations helped shape the website into a professional final product that will support and enhance the future endeavors of the Prague Project Center as it continues to grow. (See Appendix F for survey questions, see Appendix H for survey results)

## Recommendations

Looking forward, the completion of our project has led to the realization of some recommendations to improve the website in the future. The goal in providing these suggestions is to improve the overall interaction between users of the website and their ease of usability. These recommendations are catered towards future students attending Prague and the site's co-directors who will maintain the website. In this section we highlight some aspects of the site that can be standardized. This includes how to upload to the website as well as how to improve upon it heuristically.

Project uploading is an aspect of the website that will remain consistent throughout every year, due to every future project being added to the site. To avoid confusion in this process we have outlined a format that we think is the most optimal. First, future student projects, if necessary, should create their websites using Google Sites. Google sites are easy to use and free; it will also be consistent to the site if every project is made with them. Second, when downloading the reports of projects off of the site, these documents should follow a consistent format, ideally a Microsoft Word document. This recommendation creates consistency and relies on a universally accessible document type for whoever might download projects.

Another aspect of the site we recommend improving on is the use of heuristics to evaluate usability and enhance accuracy. Students who experience Prague firsthand by eating the food and visiting historical sites can make original contributions to the content of the website. For example, one aspect of this recommendation is updating the photos that are being used on the website by using photos taken by WPI in Prague. Due to the Coronavirus pandemic and our unfortunate inability to travel, we were unable to take pictures of ourselves in Prague or of Prague. Currently the site's pictures were provided to us by the co-director of the project center Professor Marie Keller or taken from the creative commons license on the internet. When future students visit Prague, we recommend taking pictures of popular attractions and group pictures of Prague IQP students at these attractions. Then replacing the current photos on the website with these photos. Similar to the suggestion to update photos on the site, the recommended Czech food recipes we have on the site could be updated as students find their own favorite dishes while in Prague.

## Conclusion

Every WPI Project Center needs a comprehensive website to inform prospective and future students, faculty, and the sponsors about all aspects of the IQP experience at their project center. The website we designed for the Prague Project Center exhibits crucial information about life in Prague as well as projects completed in the city. To create a site that was engaging and user friendly, we interviewed and surveyed past IQP students and faculty to evaluate what users and experts believe to be the best features of a successful website. We also interviewed and surveyed Czech students about their daily lives to give future IQP students cultural and logistical information about life in Prague. This information provided us with a strong foundation to create a high-quality website for the Project Center.

Our project is important to future stakeholders, as the website will serve as a main source of information for the project site. As more projects and information about the site becomes available, the website will be simple to use and update. The different projects that are completed in the future can be easily added to a section of the site that contains all past projects. This section provides the Project Center with a network for all future projects to be showcased to potential stakeholders. In addition to the project network, the website's other material can also be updated easily. Our team has provided the Prague center with an outlet to house all of its information for ease of access and organization. This project supplied the groundwork for the Prague center to grow in years to come.

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## Appendices

### **Appendix A: Interview questions for Casey Gosselin**

1. What platform did you use for building your project website?
2. Did you run in to any issues with this platform? If so, what were they?
3. Would you recommend this platform to other people?

## **Appendix B: Interview questions for TJ Cooper**

1. Which project site did you do your IQP at?
2. In the design process of the website you worked on, what are the top three design criteria you wanted to meet?
3. If you could add anything to the website you worked on, given more time, what would you add?
4. What (if anything) would you do differently to the features you included on your website?
5. What were your biggest roadblocks/struggles in your project?

## **Appendix C: Interview Questions for Rodica Neamtu**

1. What platform would you recommend we build the base of our website on? (Wix, GoDaddy, Squarespace, etc.)
2. Do you have any good references for general design?
3. Are any of your websites available online for us to view?
4. Good source for color layout and design?
5. How can we display a lot of information in an eye catching way?
6. Working with students and in your own website development endeavors, what has seemed to be most helpful/useful?

## **Appendix D: Survey questions evaluating the design of other IQP websites.**

1. When you applied for IQP, did you review any of the websites for the Project Centers?
2. If yes to the previous question, which websites did you review?
3. Which project site had the best website in terms of design?
4. Which project site had the most informational website?
5. Which project site had the most user friendly and interactive website?
6. What project site was/is your top choice?
7. Did the website of your chosen project site influence your decision to select it?
8. What is one aspect of this website that you liked?
9. What is one aspect of this website you disliked?

## **Appendix E: Interview questions for Anglo-American University student council**

1. What are your favorite cultural events/traditions?
2. What would you think are the most important parts of Czech culture for Americans to know?
3. What is one of your favorite places in the city?
4. How do you get around the city?

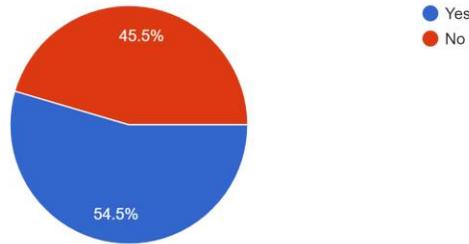
## Appendix F: Survey for Czech students to evaluate daily life.

1. How many meals a week do you prepare for yourself?
2. How many times a week do you do something social?
3. Which budget bracket fits how much money you spend per week on food?
  - a. < 350 Kč
  - b. 350 - 600 Kč
  - c. 600 - 900 Kč
  - d. > 900 Kč
4. Which budget bracket fits how much money you spend per week on social activities?
  - a. < 350 Kč
  - b. 350 - 600 Kč
  - c. 600 - 900 Kč
  - d. > 900 Kč
5. What method(s) of travel do you use to get around the city? (select all that apply)
  - a. Walking
  - b. Biking
  - c. Metro
  - d. Drive
  - e. Taxi/Uber
6. What is your favorite restaurant?
7. What is your favorite place to visit? (museum, park, etc.)

# Appendix G: Survey Results from WPI IQP Website Evaluation

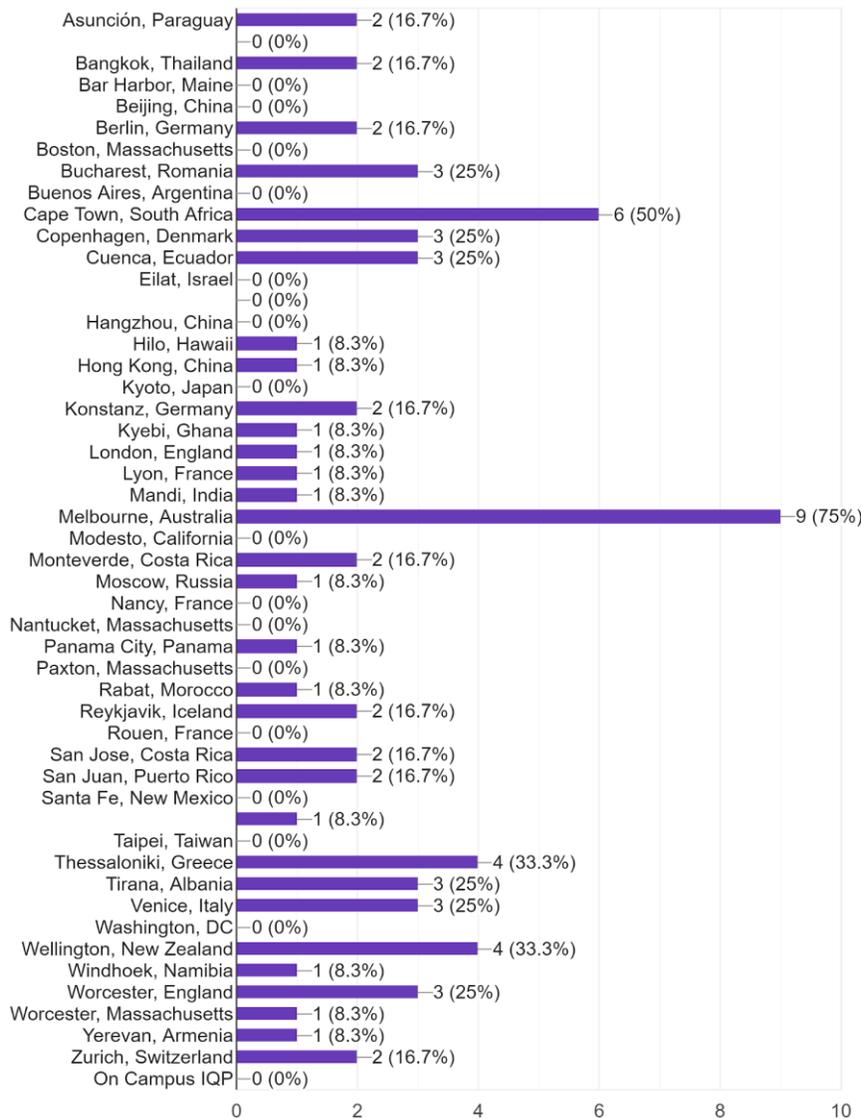
When you applied for IQP, did you review any of the websites for the project centers?

22 responses



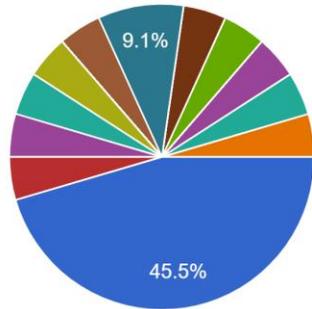
If yes to the previous question, which websites did you review?

12 responses



Which project site had the best website in terms of design?

22 responses

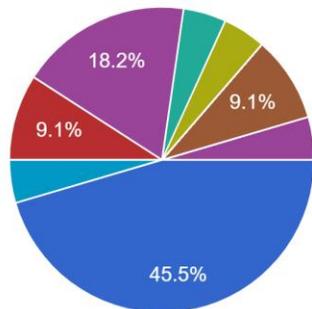


- N/A - I didn't look at any websites
- Asunción, Paraguay
- Acadia National Park, Maine
- Bangkok, Thailand
- Bar Harbor, Maine
- Beijing, China
- Berlin, Germany
- Boston, Massachusetts

▲ 1/7 ▼

Which project site had the most informational website?

22 responses

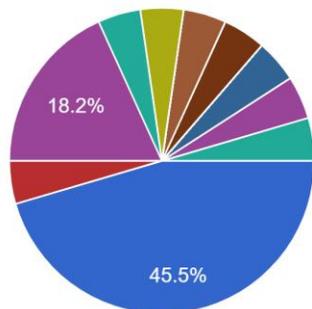


- N/A - I didn't look at any websites
- Asunción, Paraguay
- Acadia National Park, Maine
- Bangkok, Thailand
- Bar Harbor, Maine
- Beijing, China
- Berlin, Germany
- Boston, Massachusetts

▲ 1/7 ▼

Which project site had the most user friendly and interactive website?

22 responses

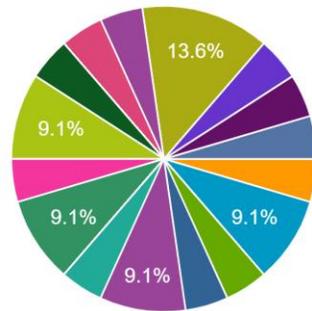


- N/A - I didn't look at any websites
- Asunción, Paraguay
- Acadia National Park, Maine
- Bangkok, Thailand
- Bar Harbor, Maine
- Beijing, China
- Berlin, Germany
- Boston, Massachusetts

▲ 1/7 ▼

### What project site was/is your top choice?

22 responses

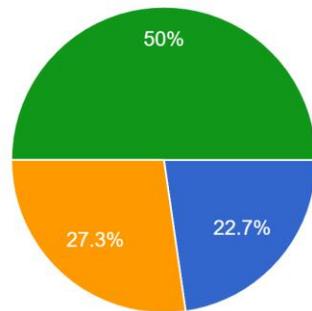


- Asunción, Paraguay
- Acadia National Park, Maine
- Bangkok, Thailand
- Bar Harbor, Maine
- Beijing, China
- Berlin, Germany
- Boston, Massachusetts
- Bucharest, Romania

▲ 1/7 ▼

### Did the website of your chosen project site influence your decision to select it?

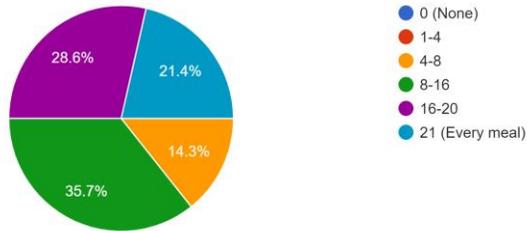
22 responses



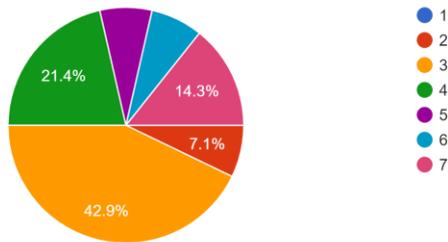
- Yes, it POSITIVELY influenced my decision
- Yes, but it NEGATIVELY influenced my decision
- No, it didn't impact my decision at all
- N/A I didn't look at this project center's website

# Appendix H: Survey Results for AAU Students to Evaluate Student Life in Prague

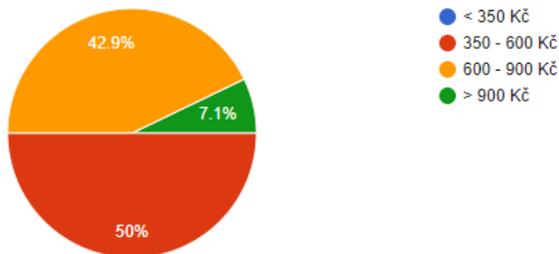
How many meals a week do you prepare for yourself? (0-21)  
14 responses



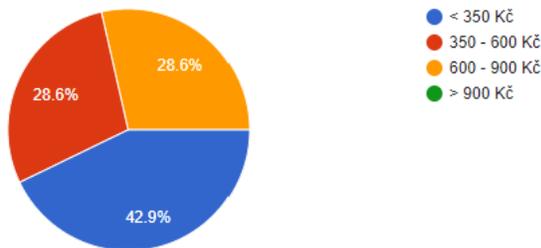
How many times a week do you do something social? (Go to a pub, see friends, etc.)  
14 responses



Which budget bracket fits how much money you spend per week on food?  
14 responses

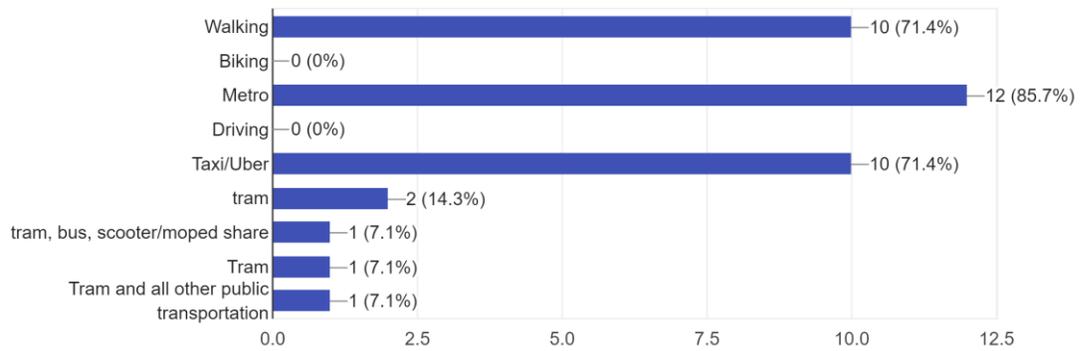


Which budget bracket fits how much money you spend per week on social activities?  
14 responses



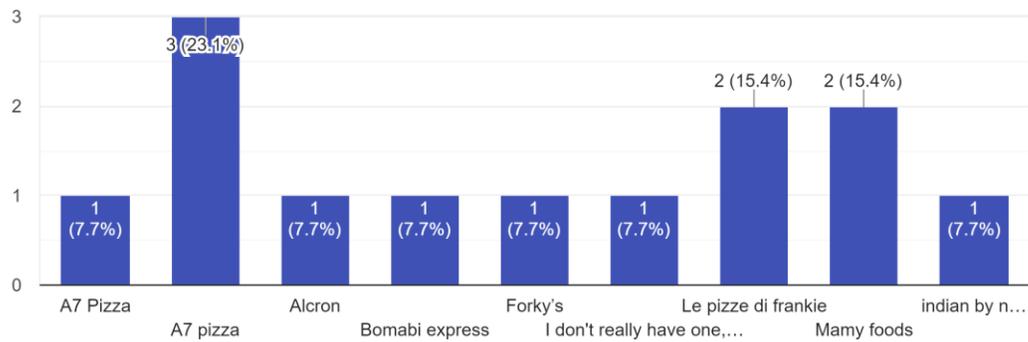
What method(s) of travel do you use to get around the city? (Select all that apply)

14 responses



What is the name of your favorite restaurant?

13 responses



What is your favorite place to visit? (museum, park, etc.)

14 responses

