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A Predictive Mobile App for Student-Based Platforms on Social Engagement within a College Community

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ABSTRACT

Students transitioning into a post-secondary education face challenges physically, mentally, emotionally, and socially. Many struggle to connect with peers in this new environment, impacting their sense of belonging and mental health. This is especially for students who miss out on in-person activities such as orientation, struggle to talk to new people, or begin school later than their peers. Additionally, students have various schedules, such as commuters who spend their time off campus and miss social activities or students not involved in clubs or school events. The COVID-19 pandemic has further reshaped the educational and social landscape, solidifying technology as a means of learning and socialization. In this digital era, online platforms can enhance student engagement, both academically and socially. FlightMU - College Friend Finder is an online platform developed to help students at Messiah University create social connections by broadening potential friendships beyond physical interactions and facilitating communication. This article will examine FlightMU's impact on student social engagement by analyzing how the platform fosters connections and enhances social experiences in a post-secondary setting.

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1 Introduction

Since 2020, many people have become accustomed to interacting with others online. When it is easy to connect with peers, making friends online is feasible for most people; however, there are usually few spaces designed specifically for connecting with others online. Social pressure is a driver for young adults and teenagers to avoid being perceived as weird, annoying, or different. Regarding normal social media, there are unspoken rules that make it difficult for people to interact with one another. Someone on Instagram may not be looking to connect with others, but one would never know that without asking.

While asking is not an impossible task, the fear of being viewed in a negative light forces young adults into a state of paralysis. This state keeps these people in a perpetual loop of wanting to reach out and never doing so because of their fear. Having a dedicated space to connect with peers removes this fear altogether. One will never question whether another person is looking to interact with others because they will know for certain that they are. Additionally, online learning has changed the college social scene. Some colleges deemed it necessary to encourage student engagement and provide additional social opportunities to help first year students find a sense of belonging in the aftermath of COVID-19 [2]. Dedicated resources like these can help students overcome the barriers surrounding making friends in university.

1.1 Background of the Study

FlightMU is a mobile app designed to address the challenges students face in forming meaningful connections and friendships on campus. Introverted and shy students may struggle to reach out to new people after moving away from home and into a college environment. FlightMU will allow students to find friends on campus using an accessible, fun, and familiar app format. This app will create the opportunity for students to connect based on similar interests and majors, allowing students who do not interact with students outside of the classroom more chances to find a new friend. By targeting students on campus, FlightMU will increase social interaction opportunities, build up the campus community, and help students to avoid isolation when moving away from home.

1.2 Problem Statement

A little over 15% of Messiah students were homeschooled or cyber schooled [3]. While not true for all, some homeschool and cyber graduates can find it difficult to adjust to a university setting, which can make it difficult to communicate. Students can also struggle to form solid friend groups until their junior or senior year. Additionally, the current college population spent a considerable amount of time in secondary school online due to the pandemic and may feel more comfortable online than in person. FlightMU will encourage communication and connection between students, enabling those who are shy or struggle to communicate in person to reach out online. This app will jumpstart the process of students forming friends and friend groups, helping students feel like they belong on campus. After introducing students using a recommendation algorithm, FlightMU will encourage group activities and in person meetings so that students can form lasting relationships during their college experience. Lastly, Messiah also has a student population of around 2,400+ undergraduates, so not all students will cross paths. Most friends are the result of similar classes, work, sports, and clubs. FlightMU can bridge this physical gap, allowing all students the chance to get to know each other.

1.3 Proposed System

To create an online platform to facilitate student social engagement, FlightMU will be a web application with a user friendly interface. Flight will allow students to match with other Flight users on their campus based on common interests and traits, creating a chat where the two users to send and receive messages. The effectiveness of Flight as a tool for aiding student socialization will be measured using student test groups and surveys.

2 Literature Review

Author James Ponzetti describes how college students deal with loneliness at an increasing level. Students who admit to being lonely typically “have smaller social networks,” or less people than others to interact with to quell the feeling of having no one [4]. Loneliness is a multifaceted topic, which stems from other issues, such as stress or helplessness. Because college is a time where many students go through major life changes, stress is destined to arise; however, stress management can negate the feeling of loneliness. Additionally, helplessness will happen at some point in a student’s college career, so to avoid falling into “[internalizing] feelings of hopelessness, distrust, or self-derogation,” students must be willing to “experience [the] loss of control” [4]. Combined with a strong group of confidants, that lack of control will be nothing more than an annoyance to the student. Prevention is the focus of combating loneliness “because remediation is more difficult when depression and learned helplessness accompany it”. [4]

In an article about the impact of social media by Kobiruzzman et al., some of the most popular social media sites are Facebook and Instagram, which are used to keep people connected. Today, many teenagers and young adults utilize social media for “education, improving relationships, job opportunities, keeping in touch with the world, [and influencing] exercise”. Social media platforms encourage people to “[create] new relationships,” specifically among younger populations; however, a prevalent issue with social media is cyberbullying, which “is a kind of bullying” that occurs “over electronic devices like

smartphones, laptops, tablets and computers” [1]. When people hide behind a screen, they feel confident to say whatever they feel like. [1]

Richard et al in their article about loneliness in America post Covid-19 there has been an alarming rise in loneliness in the American society, especially in younger people. In a national survey done that reportedly 61% of young adults between the ages of 18-25 have felt miserable degrees of loneliness. Since COVID-19, 43% of young adults have reported feeling an increase in feeling loneliness. The rise of loneliness has even had just 50% of young adults wish someone would ask how they are doing in a genuine way. Loneliness not only affects our social life, but our mental health as well. Young adults that suffer from loneliness are more likely to suffer from symptoms of anxiety and depression. Just over 63% of young adults suffer from significant symptoms of anxiety and depression. It is easy for lonely people to get in a damaging downward spiral and mental health spiral. Even when people do reach out to try and make friends, 65% report that they are better listeners to other people than other people are to them. When talking to other people 69% of people feel they try to understand others' experiences more than others try to understand their experiences. COVID-19 has affected how people socialize and even the ability to make friends which has led to a rise in loneliness in young adults. [6] Bushra et al said in their article about Generation Z and Loneliness said that it is a critical problem as Generation Z (Gen-Z) seems to have the highest numbers of loneliness of all generations. If there are no connections to other young adults, they may not get the sense of belongingness and connectedness to others. This has created a true dilemma for Gen-Z and could have severe effects in the future. [5]

There are several stressors involved with moving into college. For first years, this may be their first time living apart from their friends and family, surrounded by and living with strangers. They are also at an age of critical brain at the age of roughly 18 to 22 years old. With a heavy academic course load and other responsibilities, students find they need a social support group. In a study on the transition into university, students expressed that it is difficult to find friends in large lectures where there is little opportunity to talk to other students. Another space that students cross is in the dorm rooms, but roommates and hallmates may or may not have similar hobbies, be social, and get along. When young students are trying to find friends, they are more likely to hide, and others will not know they are in need of a friend to reach out to. The students also expressed in this study that they would find relief in having support in making new friends, knowing that they are not left to their own devices. [7] These students expressed specific difficulties of finding friends on campus and could benefit from additional tools and resources to do so.

2.1 Application Identification:

The criteria for selecting similar applications was based on a search for platforms specifically designed for managing intramural leagues. The team research concluded that IMLeagues is the leading choice among colleges and universities, with no significant competitors. Consequently, the team focused its benchmarking efforts on IMLeagues, allowing them to comprehensively evaluate and compare its features against the proposed project to ensure a focused approach.

The decision to use IMLeagues.com as a similar application is justified because it has the same use cases and functionality as the team's application. The only difference between the two is that Falcon RecZone will have added features and the existing features will be easier to use.

2.2 Data Collection:

The team selected people at random that weren't familiar with IMLeagues and timed them to navigate from a blank tab to open up the volleyball sport event. More than half of students reported a time of 60 seconds or more which is unacceptable from a software perspective, especially since they were only retrieving data and not updating anything.

The team then asked the students to count how many ads they saw throughout their experience and how many ads they expected to see, and all students reported seeing at least more ads than expected. As well as 46.2% of students reporting that there were ads all over the screen. The team then surveyed our guests to grade how nice the site looks on a scale of 1 to 10 and they reported an average score of 2.6. Last but not least, the team asked them to find the rules for the event and 61.5% of students reported they gave up because they couldn't find it. The most common reasons for this were the site being unintuitive and having vague navigation (Link to survey can be found in references below).

2.3 Data Analysis

The team reports that IMLeagues wastes a lot of time. The login page goes through 4-5 pages just to get into the site. Users then must wait for all the ads to load before the content can start to load. Once the page is loaded you must navigate through the site while ignoring ads taking up half the screen. The data collection in section 2.3 shows there is plenty of room for improvement for IMLeagues, ensuring the team will make a more useful application.

Falcon RecZone can easily jump ahead as soon as it hits the market. With its quick navigation design for intuitive functionality, users will quickly flock to this application. It will be free of ads and be visually updated, displaying a much

more modern look, and schools will notice this quickly. Furthermore, the project has a completely additional pickup game feature which will set us apart from all competitors, especially IMLeagues.

2.4 Recommendations:

Author James Ponzetti describes how college students deal with loneliness at an increasing level. Students who admit to being lonely typically “have smaller social networks,” or less people than others to interact with to quell the feeling of having no one [4]. Loneliness is a multifaceted topic, which stems from other issues, such as stress or helplessness. Because college is a time where many students go through major life changes, stress is destined to arise; however, stress management can negate the feeling of loneliness. Additionally, helplessness will happen at some point in a student’s college career, so to avoid falling into “[internalizing] feelings of hopelessness, distrust, or self-derogation,” students must be willing to “experience [the] loss of control” [4]. Combined with a strong group of confidants, that lack of control will be nothing more than an annoyance to the student. Prevention is the focus of combating loneliness “because remediation is more difficult when depression and learned helplessness accompany it”. [4]

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There are several stressors involved with moving into college. For first years, this may be their first time living apart from their friends and family, surrounded by and living with strangers. They are also at an age of critical brain at the age of roughly 18 to 22 years old. With a heavy academic course load and other responsibilities, students find they need a social support group. In a study on the transition into university, students expressed that it is difficult to find friends in large lectures where there is little opportunity to talk to other students. Another space that students cross is in the dorm rooms, but roommates and hallmates may or may not have similar hobbies, be social, and get along. When young students are trying to find friends, they are more likely to hide, and others will not know they are in need of a friend to reach out to. The students also expressed in this study that they would find relief in having support in making new friends, knowing that they are not left to their own devices. [7] These students expressed specific difficulties of finding friends on campus and could benefit from additional tools and resources to do so.

3 Method

3.1 Methodology

This analysis will consist of three phases. The first phase is the analysis of existing systems through benchmarking. Second is the development of FlightMU, a mobile application designed to connect students on a college campus. Third is the evaluation of FlightMU as an effective tool for increasing student social engagement using metrics such as a survey taken from a group of student testers.

3.1.1 Benchmarking

Flight researched Bumble's BFF feature and found parts of the app that were solid ideas to draw reference from as well as features that would not be included in the final version of our app. Flight collected data from sites with plenty of user reviews, such as the Google Play and Apple App Store. Many users complained that features were locked behind a paywall and accounts outside of the selected area popped into one's feed. While the app struggled in these areas, it still had an overall positive rating. Bumble's app had a sleek design with easy-to-learn features. The core functionalities were swiping, chatting, and matching.

Messiah University provides an online resource to help students that aims to find potential roommates called Roommate Finder. This resource is simple and solely focuses on connecting roommates. While serving its function, it lacks a fun and engaging interface, as well as the ability to connect students as potential friends, rather than just roommates.

3.1.2 Application Development

This project was initiated by a two-semester long university course, broken into two semesters. A linear development approach, such as the waterfall method, best suits the academic calendar and short time frame of this project. Additionally, the end goal of this project was established in the initial stages of this project, with clear goals integrated into the course.

Requirements were identified based using the benchmarking completed in phase one, as well as the specific goals for this project including being specific to a university setting, recommending students based off common interests, and allowing users to communicate through the application. Figure 1 below shows the Entity Relationship Diagram, describing the database table relationships and structure determined based on these requirements.

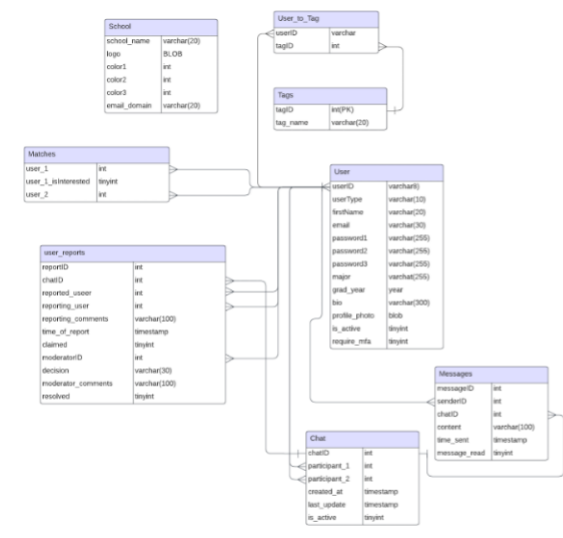


Figure 1: Entity Relationship Diagram showing design and relationship between tables

4 Results and Discussion

The effect of FlightMU as a tool for student social engagement will be discussed in three stages. First, the system will be analyzed based on the observations made in the benchmarking phase and compared to previously existing systems. Then, unique and important feature of FlightMU will be discussed. Lastly, FlightMU will be analyzed on performance.

4.1 Analysis Compared to Existing System

4.1.1 School Specific

Unlike Bumble-BFF Mode, FlightMU is school specific. By requiring the school's domain, as part of the email for registration, shown in Figure 2, and requiring the email to be verified, only students with a school email can register for the University's Flight application. This provides both security, ensuring profiles can only be viewed by other students, and a clearer focus as FlightMU targets forming connections between students.

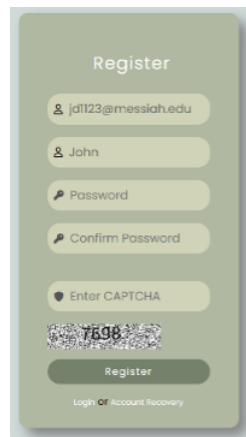


Figure 2: Registration Page requiring an email using the university specific domain

4.1.2 User Friendly

As mentioned in section 2.1.1., Messiah University's Roommate Finder lacks a user friendly and engaging interface. This page focuses solely on function and not on engagement. FlightMU has an appealing interface through the use of calm cool colors, fonts, and formatting, creating an application with both good functionality and design. Figure 3 shows the design of the FlightMU homepage.

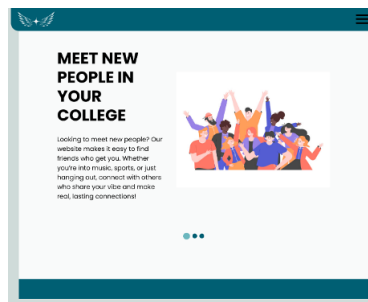


Figure 3: Falcon RecZone's Homepage

4.2 Additional Features

One of Flight's main additional features is school-per-school customization. Figures 4 and 5 are examples of the changed school customization. Only Administrators are able to access this page, which changes the entire site color scheme.

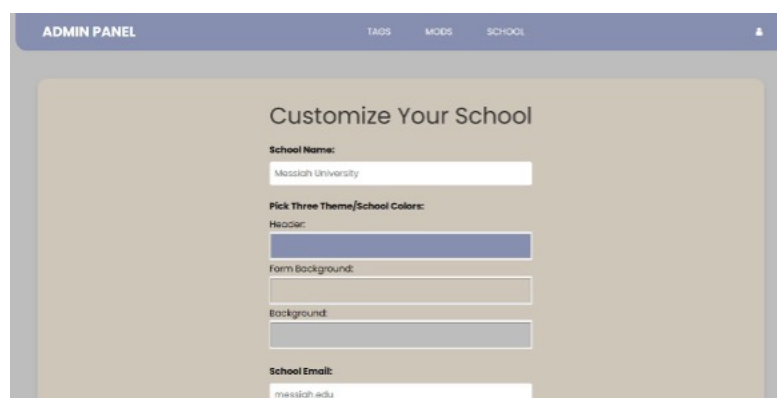


Figure 4: FlightMU School Page



Figure 5: FlightMU School Page cont.

4.2.1 Matching

The Matching algorithm takes each user registered and active on the site and ranks the compatibility between the current user and all other users through common tags and matches. Figure 6 is an example User Card, which updates match-by-match.

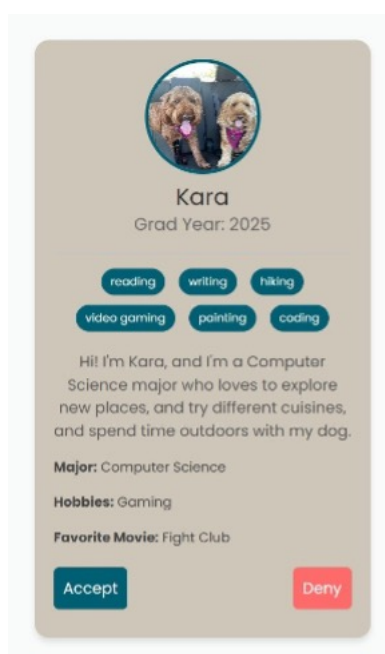


Figure 6: . Matching Card

4.2.2 Chatting

After two users are matched, a chat is created between them. In this chat, users are able to send and receive messages through this web application.

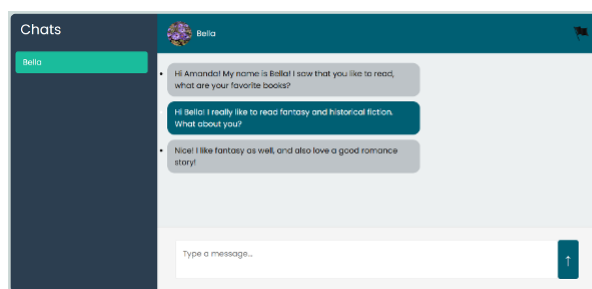


Figure 7: . Displays an example chat between two matched users on the chatting page

4.3 Performance

4.3.1 Testing Tools

For the testing of our website we tested the Performance, Accessibility, Best Practices and SEO from a common website testing for performance called PageSpeed Insights made by google for developers to test their website. According to the website test results Flight – CFF tested very well overall.

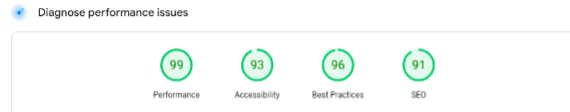


Figure 8: .Displays the overall results of the performance test with nearly perfect scores.

4.3.2 Performance

The total performance score was 99 out of 100 with a speed index of 0.7 s, there is some further diagnostics underneath with specific areas to fix. Overall although it is not a huge issue and a later one to be concerned about in the future

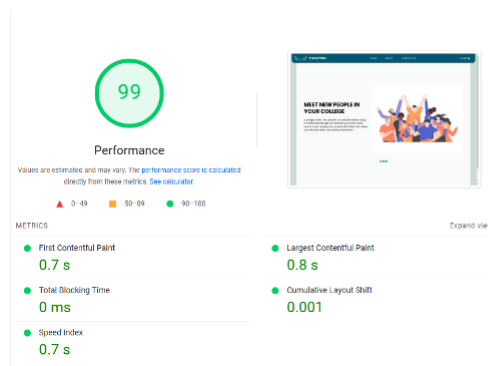


Figure 9: .Displays the performance results with a near perfect score of 99 with more minor detailed results.

4.3.3 Accessibility

The total accessibility score was a 93 of out 100 with the big error being the missing language attribute in the html to help interpretations and page readers. This is an error that will needed to be corrected in the nearest future.

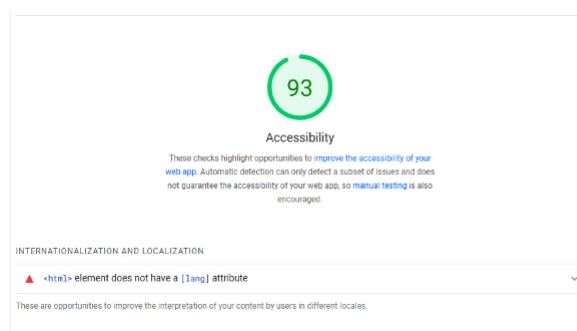


Figure 10: Displays the accessibility results with a score of 93 with a minor error of no language attribute. .

4.3.4 Best Practices

The total best practices score was a 96 of out 100 with the big error being the browser errors that are unresolved, but those are related to network or other browser concerns. There are some trust and safety features that are recommended to implement but not overall needed, it would be good to put on the list to do as an update soon.

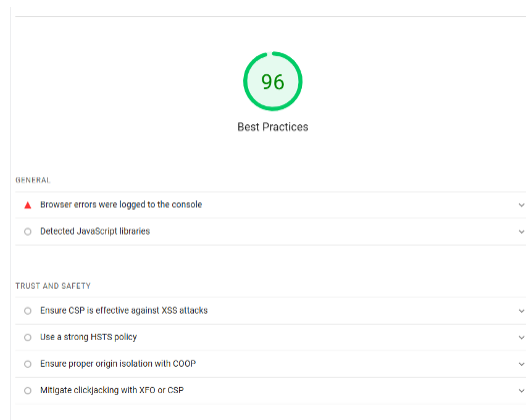


Figure 11: Displays the best practices results with a score of 96 with a minor error of no language attribute, but good trust and safety measures needed. .

4.3.5 SEO (Search Engine Optimization)

The total best practices score was 91 of out 100 with the missing piece being the meta description which with summarize the page in search results. That will be a necessary feature that needs to be added when people search up our website they know it is us from the description that will be similar to how we will advertise ourselves. Otherwise we scored very well and not too many extra errors.

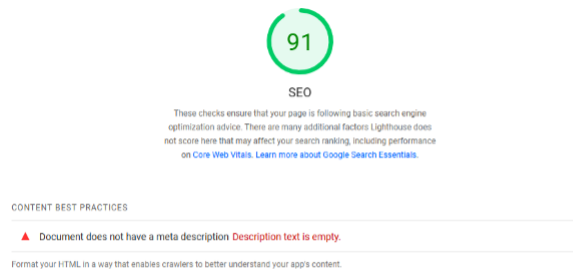


Figure 12: Displays the SEO results with a score of 91 with an error of no meta description that helps summarize what the page content contains. .

5 CONCLUSION

This analysis of FlightMU demonstrates how digital tools can be used to encourage and expand socialization. As an online platform, Flight expands possibilities for social connections beyond physical limitations and serves as a resource for students who may be struggling to find friends on their own. Economically, FlightMU as a tool can boost students' feeling of belonging, and therefore student retention for the university. By encouraging connections, students will also find support groups leading them to greater academic success and social connections past graduation.

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References

- [1] Kobiruzzaman, M. M., Waheed, M., Yaakup, H. S. B., & Osman, M. N. (2018). Impact of social media towards society: A case study on teenagers. *International Journal of Education and Knowledge Management*, 1(3), 1–12.
- [2] Kwan, M. Y. W., Brown, D., MacKillop, J., Beaudette, S., Van Koughnett, S., & Munn, C. (2021). Evaluating the impact of Archway: A personalized program for 1st year student success and mental health and wellbeing. *BMC Public Health*, 21(1). <https://doi.org/10.1186/s12889-020-10057-0>
- [3] Messiah University. (n.d.). Homeschool and cyberschool students. Retrieved March 25, 2025, from https://www.messiah.edu/info/23929/homeschool_and_cyberschool_students
- [4] Ponzetti, J. J. (1990). Loneliness among college students. *Family Relations*, 39(3), 336. <https://doi.org/10.2307/584881>
- [5] Shafiq, B., Ali, A., & Iqbal, H. (2024). Perfectionism, mattering and loneliness in young adulthood of Generation-Z. *Heliyon*, 10(1), e23330. <https://doi.org/10.1016/j.heliyon.2023.e23330>
- [6] Weissbourd, R., Batanova, M., Lovison, V., & Torres, E. (2021). Loneliness in America: How the pandemic has deepened an epidemic of loneliness and what we can do about it. Making Caring Common Project. <https://static1.squarespace.com/static/5b7c56e255b02c683659fe43/t/6021776bdd04957c4557c212/1612805995893/Loneliness+in+Am>
- [7] Worsley, J. D., Harrison, P., & Corcoran, R. (2021). Bridging the gap: Exploring the unique transition from home, school or college into university. *Frontiers in Public Health*, 9, 634285. <https://doi.org/10.3389/fpubh.2021.634285>

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Kara Wiegel is planning on graduating in Spring 2025 with her B.S. in Computer and Information Science with a concentration in Web Development at Messiah University. She is the team lead and contributes to Flight on the front-end development, design, and filling in for other tasks that need to be done. Outside of her class work, Kara works two part-time jobs, one as social media director and another as an application development. She can be contacted at: kara3beth@gmail.com



Colleen Miller is pursuing a B.S. Computer and Information Science at Messiah University, with a concentration in Computer Science. As a key contributor to Flight, she focuses on backend development and database management to create an online social platform for university students. She can be contacted via email: millcoll510@gmail.com



Madeline Gohn is finishing her B.S. in Computer and Information Science with a concentration in Business Information Systems at Messiah University. As one of the developers of Flight, she prides herself in her work of the backend development of some of the critical features of the app. Outside of class, Madeline works as a Quality Assurance Engineer. She can be contacted at: madelinegoohn1020@gmail.com