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Katie Gialloreti
Grand Valley State University

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Understanding the Women in Science and Engineering Living Learning Community from the

Inside Out: a look at the student's perspective of wants and needs for the program.

Katie Gialloreti

Grand Valley State University

Project Mentor: Anna White

Abstract

Living Learning Communities (LLCs) are used by universities and colleges to encourage collective learning and improve long-term retention in underrepresented populations. Through qualitative interviewing and surveys, this study looks to examine the resources members utilize and value within GVSU's Women in Science and Engineering (WISE) LLC. Furthermore, this study explores the motivations for joining and the impacts of participating in WISE. This study found that social and academic resources were the most valued in this community. Also, it provides insight into some challenges members face as undergraduate students and as women in STEM majors. Additionally, it gives understanding into the challenges the community has faced as a whole since switching to an online format due to COVID-19 restrictions. After consideration of these motivations, resources, results, and challenges, this study provides recommendations for the community such as continuing in-person social and academic activities (when safe to do so), continued offering of office hours, adding career resources/connections, and additional hands-on academic tools.

Keywords Women in STEM, Living Learning Communities, Resources, Online Challenges

Introduction

Benefits of LLCs

Living Learning Communities (LLCs) have four key components: on-campus living in a shared space, a shared academic goal, individual resources for that community, and academic-focused social events or activities (Inkelas, 2006). LLCs provide students with a positive environment to live and study alongside like-minded individuals. They promote seamless learning (continuous learning in and out of the classroom), an atmosphere that contains scholarly values (prioritizing their academic pursuits as a part of the community), and a sense of belonging among community members (Wawrzynski, 2009). One academic-focused event many LLCs offer is tutoring, which studies have shown to increase the confidence of women in pursuing nontraditional careers (Sax, 2006). Students in LLCs have stronger first semester GPAs, retention rates, and first-year experiences than students not involved in LLCs (Stassen, 2003). Living in these communities could help shape undergraduate student's experiences.

Benefits of STEM LLC

Resources for women in STEM are needed because women are still underrepresented in these fields. Only 26% of STEM jobs were held by females in 2006 in the US (NSF 2011). It is less likely for incoming freshman women to pursue STEM majors when compared to men (NSF, 2008). Additionally, women in STEM face a variety of barriers. One of these barriers is facing stereotypes, such as seeming 'too feminine' to go into science (Banchefsky et al., 2016). Other barriers are biases; Corbertt and Hill (2015) states that although explicit gender bias is decreasing, implicit gender bias remains prevalent.

STEM Living-Learning Communities are a powerful support to women in STEM. Maltby et al. (2016) found in their WISE community, first-generation students were more likely to graduate with a degree in a science-related field. Additionally, their students were 3 times more likely than students who were not in a STEM LLC to go on to graduate school and obtain an advanced degree in the sciences. Szelenyi & Inkelas (2011) found a similar correlation between their STEM LLC and women's plans to attend graduate school. The Women in Engineering LLC at the University of Maryland, found benefits such as a strong sense of community, gained professional development confidence, and ultimately retained a large number of the community in engineering (Samuelson, 2014). Additionally, those who are able to ask faculty and advisors for career advice are more likely to persist through STEM majors (Rayman, 1995). These STEM communities can be a huge way for women to feel supported and empowered throughout their time in college.

About GVSU WISE

Grand Valley State University has multiple Living-Learning communities, including the Honors LLC, the Art LLC, the Movement Science House, the Gender Justice House, the Women in Science and Engineering Community, and the Social Justice House. This project focuses on the Women in Science and Engineering LLC (WISE). The development of WISE took place in 2008 (Pace et al., 2008). Currently, WISE is held in the apartment-style complexes on the south side of campus, South C. The building holds two study rooms and a community library that holds a variety of STEM-related textbooks. There is room for about 70 people in the building; however, in the 2020-2021 academic year there are fewer students living in the building than typically would. To select their housing, students fill out a general application, where they can express preferences for 3 on-campus living styles. Some students indicate a preference for the

apartment-style housing in WISE and are assigned to live in South C and therefore become part of the WISE community; however, not all are STEM majors.

The leadership team, consisting of faculty mentors, peer mentors, and resident assistants (RAs), collaborate to put on events and offers additional academic/general advising support to students. The faculty mentors are professors at GVSU who specialize in specific STEM subjects such as statistics, microbiology, chemistry, anatomy, physics, etc. Peer mentors are students who are active members of the community, who serve as a role model and support members in the community. Peer mentors must be in good academic standing ($GPA > 2.5$) and in pursuit of a STEM major. RAs are students who help navigate other students through their living situations by assisting in conflict resolution, policy enforcement, and much more. The leadership team collaborates with other departments at GV, such as the Counseling Center, Rec Center, the Center for Women and Gender Equity, and the Community Service Learning Center to put on different events as well as to connect residents with other parts of the university and the greater Grand Rapids area.

This community offers events such as social events, community support events, and academic events. Some examples of social events WISE has held in the past are craft nights, yoga, Zumba, and cookie decorating nights. We have had the counseling center come to talk to students about tips to tackle finals as an example of a community support event. For philanthropic events, a liaison from the community service learning center met with the leadership team to brainstorm ideas to give back to the Grand Rapids community. Some events that have stemmed from that have been coloring bags for local charities like Meals on Wheels and Kid's Food Basket. For academic support, we have brought in professors to talk about research and classes just to network and allow professors/faculty to interact with students to

make it less intimidating to talk to them in the future. Every year, we also offer annual midterm and finals study parties where professors and students can come to hang out, study, and ask questions or work with people in similar classes to build a sense of community as well as create an environment for academic success.

Additionally, each faculty member and peer mentor on the leadership team holds weekly office hours. This time is spent asking questions about the subject that the leadership member specializes in, asking general advising questions, and socializing. Typically, leadership members hold their office hours in the lobby of WISE, but since COVID-19, office hours are held in an online format, over Zoom. Originally, when the switch was first made, all leadership members joined the same office hours call once a week for 2 hours. However, the team decided to revert to an individual model. In this model, each faculty mentor had their own Zoom room set up, and students could email peer mentors and RAs to set up individual appointments

In a normal, non-COVID-19 year, the community goes on a field trip prior to the beginning of the fall semester. The field trips are intended to be an initial bonding event that takes place the week before school starts and are popular within the community. In the past, this has consisted of going to a museum to see the planetarium, a trip to a local apple orchard, going to a petting zoo, etc. This year there was not a big field trip, but some of the community members did gather mid-way through the year to attend GVSU's on-campus winter-themed event.

Describe inspiration for the project, and goals of the project

I have been a part of WISE for the past 3 years, and a peer mentor for the past 2 years. WISE has been an integral of my community and support system. When COVID-19 hit in March

of 2020, the living-learning community supports shifted to an online format, and all meetings and office hours were held over Zoom. For the most part, all events have continued online through the winter semester of 2021. Through this process, the WISE leadership team noticed that the needs and wants of the community have shifted, and the rate of participation since the move to online had decreased significantly. Through this project, I wanted to capture the impact of the LLC resources for members during this time.

The original goal of the project was to evaluate the needs and wants of members of WISE, and come up with suggestions to improve WISE in an online format. The development of the vaccine and decreasing infection rates has given the community hope to return in an in-person format in Fall 2021. Because of the potential for a return to in-person, I decided to make the shift to using this project as a soundboard for those who went through this year, highlighting what is most valuable in the in-person format. Sometimes we do not realize what we missed or valued until it's gone; I hoped that the frustrations of the online format would highlight for the community what must be kept or improved in an in-person experience.

Methods

Participants

All participants were members (both former and current) or leaders in the Women in Science and Engineering (WISE) Living Learning Community. I distributed the survey via the community's main forms of communication to all current members of WISE as well as select previous members. 20 participants submitted full survey responses. 5 WISE leaders (Faculty mentors, peer mentors, and RA's) and 7 current WISE members participated in an additional interview.

Materials

The survey focused on general information about the participation and experiences in WISE, including the number of years of membership, number and type of events attended, recommendations for future events, and some of the impacts of participating in WISE. The participants answered a series of 11 multiple choice questions, 2 open response questions, and six 7-point Likert questions ranging from strongly agree to strongly disagree. The final survey question was an open response space for participants to indicate if they were interested in taking part in a follow-up interview. Survey responses can be found in Appendix A.

I conducted a series of qualitative interviews with seven WISE residents. I asked 6 open-ended questions, focusing on the motives for joining the community and the resources participants valued in WISE through a qualitative interview process. Through this process, I aimed to gain a better understanding of the students in the WISE Living Learning Community and how the switch to online has affected them.

Similarly, through qualitative interviews with five WISE leaders, I asked 7 open-ended questions focusing on the resources that WISE leadership values, the motives for the leadership to join WISE, and how the online programming due to COVID-19 affected their positions. Through this process, I aimed to gain a better understanding of what the leadership in WISE valued and how the switch to online has affected them.

Initially, I hoped to include and compare data from a third survey that looked at other Living Learning Communities at GVSU (Gender Justice House, International House, the Movement Science House, etc). I felt that feedback from these other LLCs could provide additional perspective on what members value and how LLCs handled the shift to online

learning; however, it was not clear whether the populations of other LLCs were appropriately similar to that of WISE. When I received no survey responses from this third participant group, I decided to omit the survey from the project.

Procedure and data analysis

I sent out the survey link to the building's main communication platforms, which are email via Blackboard, GroupMe, and Snapchat. When fewer participants than expected expressed interest in a follow-up interview, I sent an additional request through the main communication platforms, offering a candy bar of the interviewee's choice for participation. A separate email was sent out to the faculty mentors, peer mentors, and RAs to ask if they would be interested in interviewing as well.

If participants showed interest in interviewing, I arranged a time to meet with the students via Zoom. At the beginning of the interview, the participants agreed to be recorded for the sake of transcription later on. All recordings were deleted immediately after transcription took place.

In my informal data analysis, I noted the common responses to the Qualtrics survey questions. Additionally, I listened to my recordings of the interviews and transcribed them. Recordings were deleted immediately after transcription. After transcription, I was able to read through separate answers to each question and to note any recurring themes by identifying repeated words or concepts mentioned by more than one interviewee; I also made note of significant representative quotations. After I determined major themes, I completed an additional review of survey and interview responses to highlight other pertinent information that may not fit neatly within a theme but could still be used to make meaningful recommendations to the WISE

community. These data groupings and my accompanying analysis are provided in the following sections.

Results

Interviews with participants

How did you find out about WISE?

This question was asked to gain an understanding of how we are obtaining information about the program. Through the interview, I noticed there were a few reoccurring themes. Many people knew they did not want to live by themselves or did not want to live in a traditional dorm. Many people learned about WISE simply by looking at the housing applications or the GV website. Close to half of the people I interviewed did not know about the specific resources that the program offered and just knew that it was a building for women in STEM. They stressed that they wanted to live with people who were taking similar classes, and were interested in working with other students who are in the same classes as them. One participant knew about the resources because they were recommended by a faculty member at GV and were given a tour.

These interview results were similar to the results in the survey at least a third of the survey respondents said they didn't know anything about WISE, an additional third knew that it was just a place for those in STEM.

What interested you in joining WISE?

This question's purpose was to gain an understanding of members' motivations for joining the community. What interested people in joining had a lot of overlap with how they found out about WISE. Participants stated that the type of housing option WISE offered was a

big appeal. Students did not want to live alone and wanted roommates (however, due to COVID-19 changes, many traditional dorms were switched to individual living rooms) Similarly, they saw the community as a way to make friends and partake in a “family-like” environment. 5 students stated that being around people going through similar experiences as them was appealing. They also valued being able to make connections and collaborate with other students.

1-What challenges do you find from being a woman in stem?

2- What challenges do you find from being a woman in stem in this new online world?

For this question, there were a few themes that popped up repeatedly. All participants acknowledged that there are struggles women face being in STEM fields. A group of students acknowledged the struggles most women faced, but when asked if they had any examples of this they did not have any at the moment, but they anticipate they will run into these struggles in the future. Some of these anticipated challenges were obtaining credibility and recognition from male counterparts. Several participants stated that it was harder for women to get jobs and be paid equally and/or rise up in their careers, especially in male-dominated STEM fields. Participants who had specific examples of personal struggles said in classes that there is a disproportionate amount of males to females; some stated they were one of two females in the class. All of the engineering majors (3 students) emphasized this. One student stated that asking for help in those classes is more intimidating because they don't have a female classmate to turn to. Students felt overlooked and unheard especially in groups predominantly made up of men. One student talked about a time she was the only female student working on a group project. As the only woman, she felt pressured to take a leadership role on the project, but also felt that the other (male) group members did not respect her as a leader. Another student recalled her high school years, where she felt that both her male and female teachers would discriminate against

females by calling on men the majority of the time. Students also talked about how they think it will be harder to assert dominance in groups and stand out in STEM majors and occupations as a woman. While reflecting one student spoke about how she was discriminated against as an African American female, adding another challenge to navigating through her college experience: “especially in engineering, one because I am an African American female, and two engineering is male-dominated. It is hard trying to find a way to stand out from your colleagues. And so that’s my hardest thing.” Similar to other students, this student wants to be heard and respected for her contribution, yet she feels her intersectional identities make it harder to stand out among her peers.

The online aspect of classes

Although this question was intended to focus on issues with being a woman in STEM in an online format, all students spoke to the general student experience. Only one student spoke to the specific confusion that came with discrimination in the STEM field in an online format. This student said that she felt less likely to be discriminated against, because on Zoom everyone is just a box.

Some students talked about how their motivation, in general, has been lower for classes as well. Another participant stated that it was harder for her to figure out if she was being discriminated against or if it was just the “weirdness” of the online format. This student explained a group she was in that does assignments together and is graded on these assignments has only ever communicated through text. It seemed to her that she was not being heard and seen, but she didn’t know if that was just the nature of the communication method or if she was the only one experiencing this issue.

Overall, the interviews stated that regardless of gender discrimination, the online experience is harder than in-person. They felt that one of the challenges, in general, is that it is harder to focus and pay attention in online classes, partially due to more distractions such as disruptions in their learning environment. People are having a hard time making friends, finding people to study with, and developing connections. Some of the first-year students were not aware of the difference between in-person classes and online classes, because they have only known this online/hybrid format.

Several participants reflected on the time they had in-person, stating Zoom was not as fun. They miss the time they got to spend connecting with WISE residents and professors. One of these students expanded upon the question to say she feels that the way she interacts socially, both online and in-person, has changed. Before COVID-19, she was a self-described “social butterfly,” but now reports feeling “weird” and “awkward” talking to people. In in-person situations, students have an additional layer of complication as they try to determine others’ risk comfort levels associated with the virus.

How has online learning affected your willingness or desire to participate in online social events?

Almost all participants’ willingness or desire to participate in online social events have been impacted negatively. Overall, students talked about how this year has been more physically, mentally, and academically demanding than previous years. They are overwhelmed with the amount of work that comes with online classes. In addition, students talked about how they were physically exhausted from staring at a screen for the majority of the day. Some said online social events were less fun for them because it is harder to connect with people when you are battling to

talk and missing body language cues. Another student talked about how there is a personality people put on when online that is different than in-person. She also missed feeling the energy of other people around her, which is absent in online events. One student stated that they appreciated the craft events that were offered since she could do those in person with her roommates instead of joining online.

Students who were in WISE in previous years liked participating in the online events because they could see people they haven't seen in a while and had already made connections with. She also said WISE events were the only online social events that they participated in.

These results were aligned with the survey responses. When asked, "If you were a part of WISE before in both online and original, how has the switch effected your participation in WISE?", about 30% of participants selected they either 'decreased in participation or stopped participating', 25% selected 'continued participation throughout', and the rest of the respondents were not a part of WISE before the switch.

What resources did you most value from the LLC and were there any resources you wish you had?

Five of the participants I interviewed said they valued the academic support they received in WISE the most. This looked different for each individual. For some, it was the office hours the leadership team hosted to help with tutoring, general advising, or just to study together. One student appreciated that they were always there even though she admitted to not using the resource herself. Another student said being able to connect with faculty on a more personal level made it easier for her to ask for help when she needed it. For others, this academic support came in the form of working together with roommates on school work. Another resource that

people valued was the access to textbooks in our community library. This allowed people additional study tools to explore topics and subjects, without having to leave the building. Lastly, email reminders that the faculty sent out that reminded them about events and advice to help them navigate through college were appreciated.

The resource that most people wished they had was more in-person events. The Qualtrics survey suggested similar activities when asked “What would you like to see in the program in upcoming semesters?” Results showed things such as in-person events, field trips, more community-building activities, and more participation from others.

Though the question was intended to identify academic and social resources residents hoped for, several people noted resources specific to the physical space of the LLC. Students talked about the amenities, such as the need for a functional printer and more washers and dryers. The building has a printer and computers, but the printer has not worked for at least 3 academic years. There are 3 washers and 3 dryers in the building for 70 people, which has caused some friction in the community. One student said it would be nice to have a DVD player to have movie nights with the building as a social event option. Another student wishes there was a service that would help them match with roommates based on personality.

What is something that you would like incoming (LLC or WISE) residents to know?

The majority of interviewees encouraged incoming students to get involved, go to events, socialize, utilize resources, and have fun. They also wanted incoming residents to know WISE is a great community and said it feels like family. Other residents wanted them to know that it is “really chill” and there are not a lot of distractions. One student stated they like the apartment-style rooms but warned about the downside of not having a lot of food options close to the

building. Due to COVID-19 restrictions and changes at the university, The Blue Connection (the nearest dining option to WISE) along with other dining options on campus, limited the options they served and shortened their typical hours,

One student summarized her advice as follows: “It is definitely worth it to stay here. You will meet other females like you who are struggling like you who are motivated like you, who are hard-workers. One thing about us WISE women, we are definitely working our butts off. These majors are the hardest major, and two times as much work. It is definitely worth it and you are going to meet some great people. And we do fun stuff, in previous years you probably had more fun. Do it and you are going to love it.”

Is there anything else that you would like me to know?

One interviewee wanted me to know that “WISE is interconnected with everyone and is “one big ol’ family” and it is relieving to know that people care about people no matter what, no matter their major, race, gender, gender identity.”

Lastly, several respondees reiterated that students hope to go back to in-person events next year.

Additional Qualtrics Data

Part of the survey’s goal was to capture the impact of living in the WISE community. In order to gather this information, the survey included a set of 7-point Likert scale (ranging from strongly disagree to strongly agree) questions. Due to the low number of responses, I combined any ‘agreed’ response (strongly agree, agree, and somewhat agree) as well as any ‘disagree’ response (strongly disagree, disagree, somewhat disagree). Each Likert scale question was prefaced by the phrase “As a result of WISE.” From the survey responses, it is clear that as a result of WISE, most survey respondees felt academically supported (87% agreed, 13% neither

agree nor disagree), felt that they were part of a community (87% agree, 13% disagreed), and regardless of their participation, they knew the resources were there if they needed them (93% agreed, 7% neither agree nor disagree). Additionally, as a result of WISE, several respondents felt that they built lasting connections (53% agreed, 7% neither agree nor disagree, 40% disagree), their grades improved (47% agreed, 47% neither agree nor disagree, ~7% disagree), and their mental health was improved (60% agree, 7% neither agree nor disagree, 20% disagree). The sum of these percentages may add up to more than 100 as a result of decimal rounding.

Interviews with Leadership

What interested you in joining WISE as a leader?

Each part of the leadership team joins in a slightly different way. Faculty mentors are recruited and hired but our faculty director. RAs apply and interview through the housing department. RAs are placed into different housing and are not allowed to choose where they want to live. Peer mentors apply and interview with the faculty director.

I saw two patterns with this question. The members of leadership who are still students (Peer mentors and RAs) felt like they were already part of the community and wanted to give back. They know what it's like to be a freshman and how easy it can be to feel lost. They wanted to be a resource for undergraduate students. Members of leadership who are already in their fields have faced the discrimination women face in male-dominated professions. They want to be a resource by being a female role model for undergraduate students to come to when they need help or guidance.

One leader said, "When you are in college you don't realize there are barriers ahead of you. As you get closer and closer to these barriers, you realize they exist. It's important to

provide mentorship for WISE students so they know there are other people out there that are doing the same things.”

How has your role shifted since being online?

All of the leaders had mentioned the decrease in student engagement since going online. Traditional in-person social and academic events have not transferred well. Members of leadership think this is because students are burnt out, or just tired from looking at a screen for their normal classes. The interviews showed that different leaders handled the shift to online in varied ways. For example, one leader emphasized the importance of adaptability for her. She said, “When something doesn’t work scrap it and try something else.” Another leader had mentioned that their position was to take a more behind-the-scenes approach, allowing students to reach out on their own terms.

What are some things you have learned from leading in an online format?

The answers to this question varied. One leader said she learned how to be more creative and think outside the box on how to increase student engagement. For her, this was focusing on how we provide resources to help with mental health since she noticed that people are burnt out. For example, she provided little things like snacks and coloring kits to the residents, which brought them little bits of joy and opportunities for self-care.

Two of our leaders mentioned the importance of informal interactions. Faculty mentors in a normal year would sit in the lobby to hold office hours. Students may not have planned to attend office hours, but would stop by when grabbing their mail or a snack. After seeing faculty members in their space, they felt more comfortable to come talk or ask for advice. Faculty members found the absence of these informal interactions to be a challenge of the online format.

A faculty member explained, “Students might not have questions, but they just want to hang out or just want to do a puzzle and talk about what’s wrong in their life. Part of being a faculty mentor is being an adult-type person that’s not a parent or a professor that can give advice.”

One leader learned the importance of marketing yourself as a leader when you aren’t able to have much of a physical presence in the community. Part of the challenge of being a peer mentor in this format was just letting people know you are a resource. Students are aware of RAs because they are standard in any on-campus housing format. Students are also aware of faculty members because they are professors who can help with classes or general advising, but students are unaware of how they can reach out or utilize peer mentoring since that resource is unique to LLCs. Thus, peer mentors may struggle to market themselves as a resource in this online format.

Another one of the WISE leaders learned the importance of giving herself grace: “Everyone is doing our best, our best right now might not be our best in a normal time.” She appreciates the small victories, such as talking to residents in the hallway. She no longer reflects on what things could have been: for instance, instead of wondering why people aren’t showing up, she appreciates the few students who do show up to the events.

What resources do you think are most valued from the LLC and were there any resources you wish you could offer?

The majority of leadership respondents agreed that the most valuable resources were both academic and social. One leadership member reflected on how faculty members are able to provide both of these resources, saying, “Faculty are top-notch resources. They are underutilized,

will give their heart and soul to help you out. People are intimidated by the title professor or faculty when they are just good humans and fun to hang out with.”

Almost all leadership members interviewed said office hours were the most valued resource from the LLC. This value was extended to not only the academic resources that are offered through office hours, but also the informal advising that comes with it. For example, one leader said professors helped students write emails, find someone to do research with, and connect them to resources on campus. Another leader stressed that the opportunities to connect with upperclassmen were a resource that was most valuable. This helped undergraduate students to have someone to show them the ‘ins and outs’ of college.

Resources you hope to offer in the future

Two leaders had the desire to offer events that help with career-building, like interview preparations or making a connection with someone at the career center to be our WISE career liaison. One leader mentioned that they wished we could connect people that work in fields in the community to create a formal mentorship program.

The other half of the leaders wished we could offer more technology. The types of technology mentioned were resources that provide a hands-on learning experience, such as an anatomy skeleton or other kits that could be housed within the LLC and used by participants for independent and group study.

What is something you would like incoming residents to know?

All of the leadership participants want incoming residents to be able to best utilize the WISE community as a whole. Each leader had a different idea of what this might look like.

One leader peer mentor encouraged participants by saying, “Talk to people and try to find the people you vibe with. Especially in this building, a lot of us are taking the same classes. Everyone is very nice. The peer mentors and RAs are here to help you. Get involved and find something that you’ve loved, join a club. Utilize your peer mentors, they are here to help see how your classes are going and help connect with resources. Connect with the faculty, they will go out of their way to help you.”

One leader pointed out the lack of branding for WISE leads students to not know the community environment they are signing up for. She would like students to know the resources and community that is offered to hopefully get more engagement.

Other leaders stressed the importance of utilizing the resources and events that are offered. This member feels that South C, where WISE is housed, is nicer than the dorms, which is in itself a resource. Additionally, she stressed that the leadership is there to help all residents, but it's important to get involved in order to take advantage of these resources and feel a part of the community.

Is there anything else you would like me to know?

Two leaders provided additional information which stressed the importance of establishing an identity within the community and providing additional marketing for the community.

One leader wanted me to know that coming up with an overall goal or mission for the community could be a way to improve the program. She continued to point out that a lot of the faculty have faced barriers with being a woman in science, and they want to build a network in the face of these events. Having a goal would help improve the culture and allow for a stronger

purpose that could answer the question, “Why are you (as a student) there?” She wanted to help focus the group by having a specific identity that one could lean back on when struggling.

Another leader wanted me to know that the community is valuable and should be advertised more. It is valuable because it helps people not feel alone, helps with mental health, and provides a sense of belonging to be a part of a community.

Discussion

What can we learn from the lack of in-person classes?

The subject of online classes came up and is troublesome for some students. Students are physically and mentally exhausted and experiencing burnout and Zoom fatigue. In addition to this, students had very little interest (if any) in participating in online social events. The WISE community is providing the resources a living-learning community should, but in an online format, so some of these resources were not as utilized and therefore not as effective. The WISE community, when safe, should transfer back into an in-person format. Through the COVID-19 pandemic, several people found that they appreciated their in-person WISE experiences more when they were no longer able to participate. Leadership and WISE members have been able to reflect on this time and emphasize what they miss.

One topic that the absence of in-person events made clear was the importance of connections and informal interactions. Having conversations while studying together in the lobby, and sharing space and energy allows students to connect with other students and form trust and supports in their interpersonal connections. Similarly, this is how students connected with the leadership team. Through holding office hours, students would stop and say hi as they

walked by or grabbed a snack. These interpersonal connections are vital to the utilization of WISE resources.

Recommendations for further implementation

WISE has made efforts to partner with different departments on campus in the past. One department that could be beneficial to partner with is the career center. Career supports in STEM initiatives have shown to decrease negative career thinking (Belser et al., 2017). One idea was to have a liaison from the career center; this individual could help residents develop a network of connections in the community, and these connections could serve as additional role models and mentors. Some ideas for improvement could be hosting career nights, similar to bringing in faculty, but instead, bring in people who work in STEM field. By building these relations with the community, it may help students develop additional mentors. Resume or cover letter events may also be beneficial in providing career support for students. Taking steps within the LLC to make connections and advance WISE students in their careers can have long-lasting beneficial effects.

Many WISE students are unaware of the resources and events offered that would help them as STEM majors when they join WISE. A specific WISE application or interview process to get into the program would allow students to receive information about the program, create collective goals and rationale for joining, and could potentially lead to an additional increase in participation and impact within the community. In addition to this, further marketing of the WISE LLC would allow the community to become more aware of the program. More marketing and attraction of the community could allow for all of WISE to be STEM-related majors, which would enhance the sense of belonging within the LLC. Marketing could look like an increase in

social media usage from within WISE and from GVSU pages. Additional ideas could be creating outreach events with either STEM classes or area high schools. With these suggestions, WISE could make the building selective to STEM majors who wish to partake in events. The more people that are able to attend events, and participate in community-building events, the larger the community will grow. This may also assist in a collective identity striving towards a similar goal. A STEM identity may help student overcome barriers (Lee, 2013), which also helps increase a sense of belonging within the community (Rosenthal et al., 2011).

Practical and functional upgrades to WISE would be beneficial. Adding more washers and dryers will mitigate the amount of conflict that stems from them being constantly used or full. Adding functional printers and computers for the community would provide students some relief to not have to go to the library every time they need to do work and provide an additional academic resource. This would be especially helpful to any resident who might be in financial need, especially with so many classes online.

Also, more advancements to the academic tools could greatly improve the variety of resources offered to students. Hands-on learning tools, such as engineering kits and plastic skeletons could be the next steps in advancing academic resources in WISE.

Limitations

This project was designed specifically to gather information from Grand Valley's WISE program. Therefore, these results might not be transferable to other WISE programs or LLCs in general. Additionally, voluntary response and convenience sampling were used to obtain Qualtrics data, therefore the data might not represent the accuracy a random sample would have.

This project did not require IRB approval: we submitted a self-determination form explaining our exemption under category 2.

Conclusion

GVSU's WISE community continues to offer support through a very uncertain time. Even though the online format has not been well-received, some of the social and academic benefits of belonging to WISE in-person have transferred over. The restrictions placed on the community by the pandemic shined a light on what the LLC truly values. This project serves as a reflection of the community resources and experiences.

Grand Valley will provide additional Living Learning Communities beginning in the Fall of 2021. This includes LLCs for engineering, social work, business, and undecided students. GV has dedicated itself to improving housing for all residents by utilizing a personality, interest, and lifestyle-based matching system to facilitate roommate pairing; LLCs such as WISE should rely on this in the future. With these strides the university has taken to provide more LLCs, it is also important to look at the larger picture and see how we can continue to improve on the current LLCs.

Considering the needs of new and current communities will benefit all Laker LLC residents in the future.

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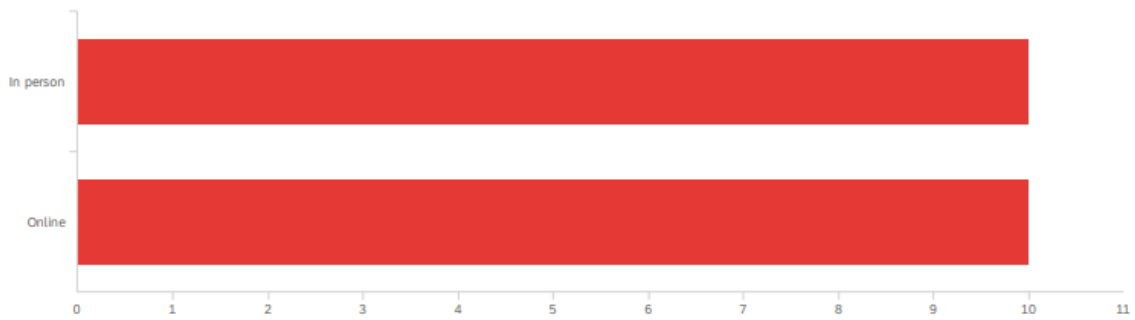
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Additional Information

Appendix A: Qualtrics survey data

WISE Honors Project
 April 22, 2021 1:26 PM MDT

Q2 - What format was the WISE program in when you joined?

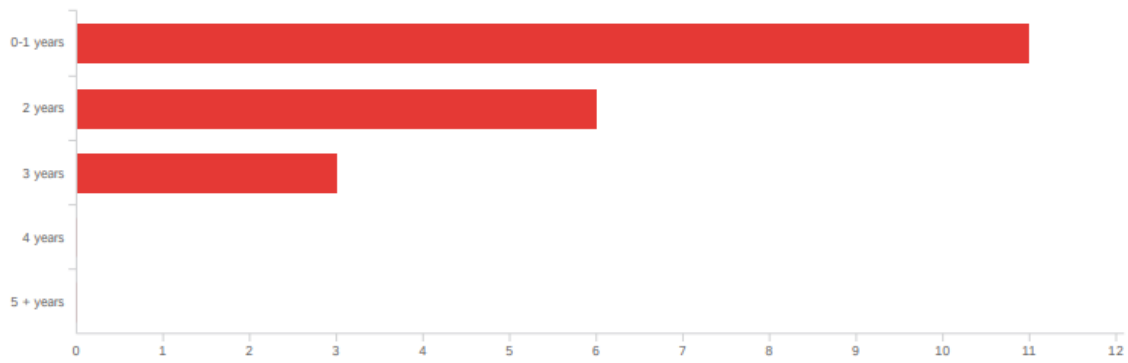


#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	What format was the WISE program in when you joined?	1.00	2.00	1.50	0.50	0.25	20

#	Field	Choice Count
1	In person	50.00% 10
2	Online	50.00% 10

20

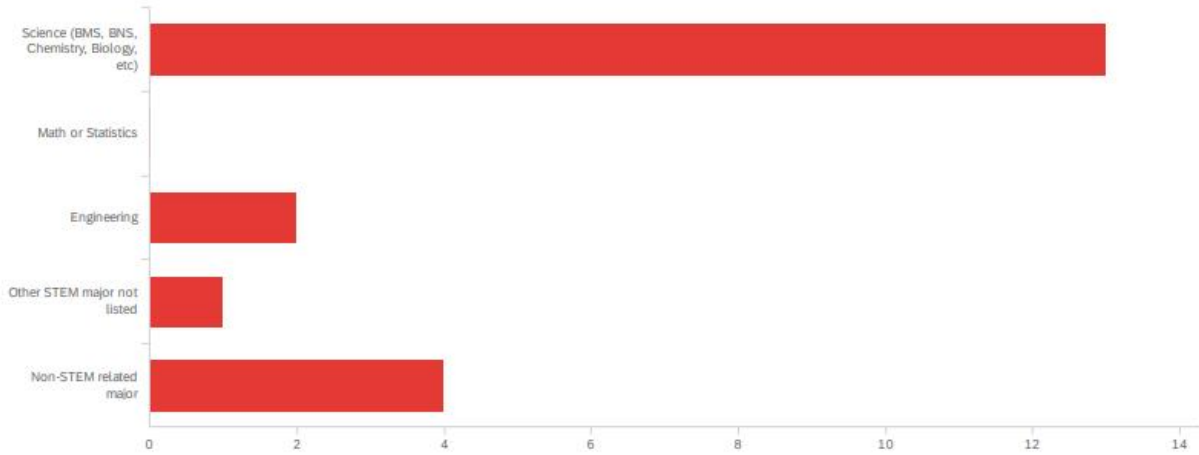
Q8 - How many years have you lived in WISE?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	How many years have you lived in WISE?	1.00	3.00	1.60	0.73	0.54	20

#	Field	Choice Count
1	0-1 years	55.00% 11
2	2 years	30.00% 6
3	3 years	15.00% 3
4	4 years	0.00% 0
5	5+ years	0.00% 0
		20

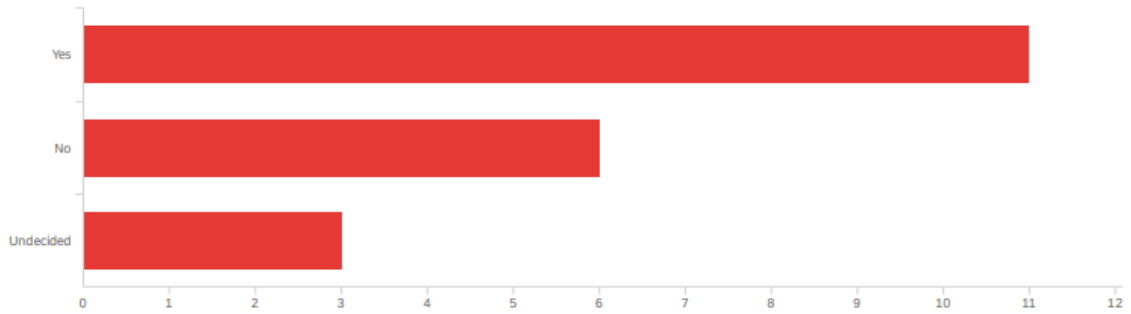
Q9 - Major



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Major	1.00	5.00	2.15	1.65	2.73	20

#	Field	Choice Count
1	Science (BMS, BNS, Chemistry, Biology, etc)	65.00% 13
2	Math or Statistics	0.00% 0
3	Engineering	10.00% 2
4	Other STEM major not listed	5.00% 1
5	Non-STEM related major	20.00% 4
		20

Q10 - Do you plan on going to grad school?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Do you plan on going to grad school?	1.00	3.00	1.60	0.73	0.54	20

#	Field	Choice Count
1	Yes	55.00% 11
2	No	30.00% 6
3	Undecided	15.00% 3
		20

Q4 - Estimate how many events have you attended in your time at WISE. (Events are things like craft nights, study parties, etc)



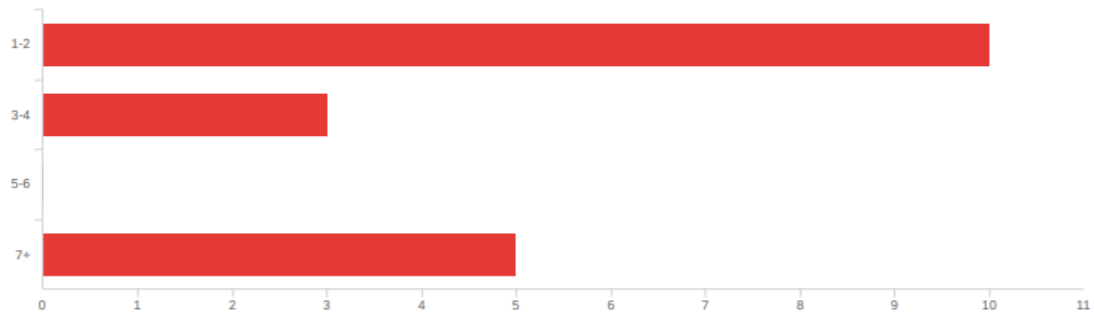
#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Estimate how many events have you attended in your time at WISE. (Events are things like craft nights, study parties, etc)	1.00	4.00	2.50	1.34	1.81	18

#	Field	Choice Count
1	1-2	38.89% 7
2	3-4	11.11% 2
3	5-6	11.11% 2
4	7+	38.89% 7

Q6 - Estimate how many office/study hours have you attended in your time at WISE.

(Study or office hours are times set by faculty mentors and peer mentors to help with

tutoring or study skills)

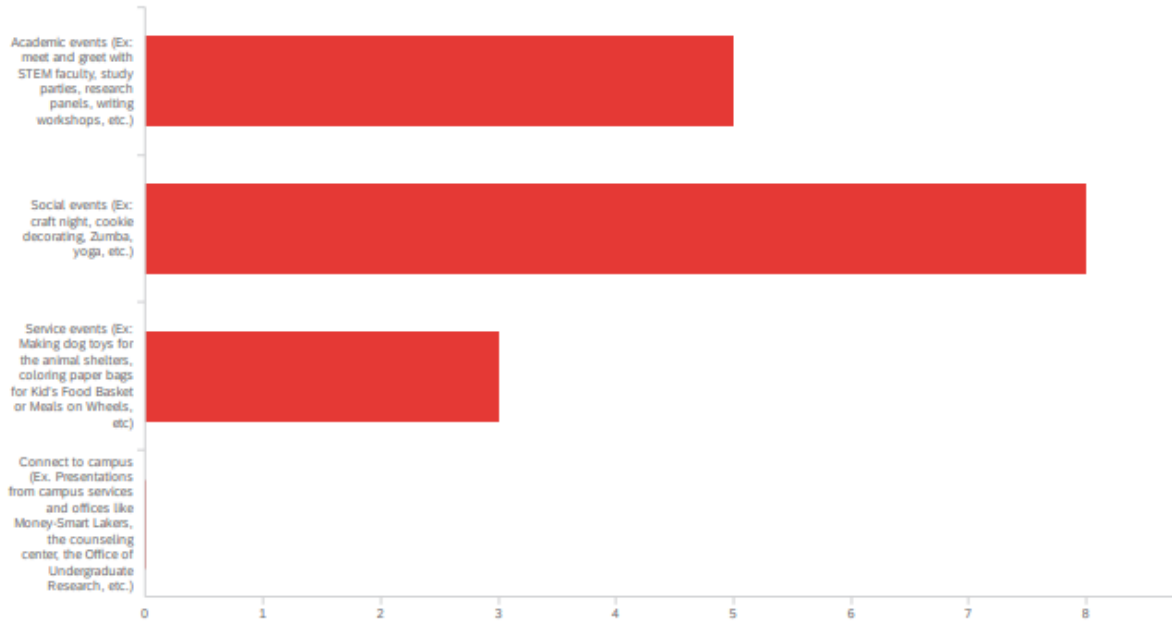


#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Estimate how many office/study hours have you attended in your time at WISE. (Study or office hours are times set by faculty mentors and peer mentors to help with tutoring or study skills)	1.00	4.00	2.00	1.29	1.67	18

#	Field	Choice Count
1	1-2	55.56% 10
2	3-4	16.67% 3
3	5-6	0.00% 0
4	7+	27.78% 5

18

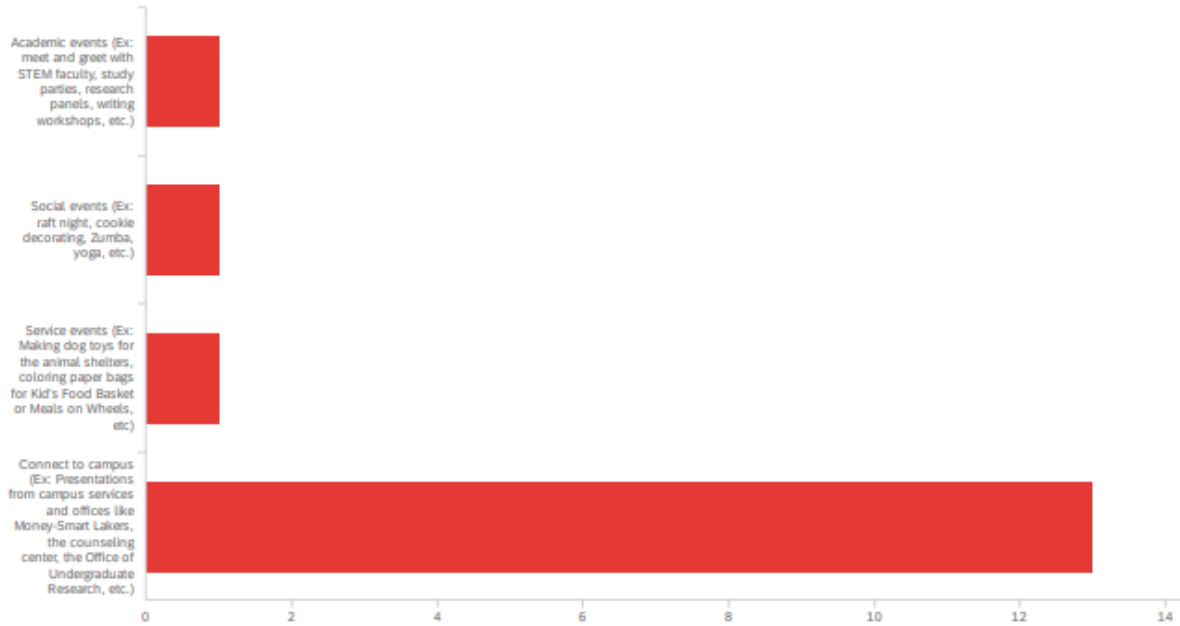
Q7 - If these types of events were offered over Zoom, which events would you be most interested in participating in?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	If these types of events were offered over Zoom, which events would you be most interested in participating in?	1.00	3.00	1.88	0.70	0.48	16

#	Field	Choice Count
1	Academic events (Ex: meet and greet with STEM faculty, study parties, research panels, writing workshops, etc.)	31.25% 5
2	Social events (Ex: craft night, cookie decorating, Zumba, yoga, etc.)	50.00% 8
3	Service events (Ex: Making dog toys for the animal shelters, coloring paper bags for Kid's Food Basket or Meals on Wheels, etc)	18.75% 3
4	Connect to campus (Ex: Presentations from campus services and offices like Money-Smart Lakers, the counseling center, the Office of Undergraduate Research, etc.)	0.00% 0

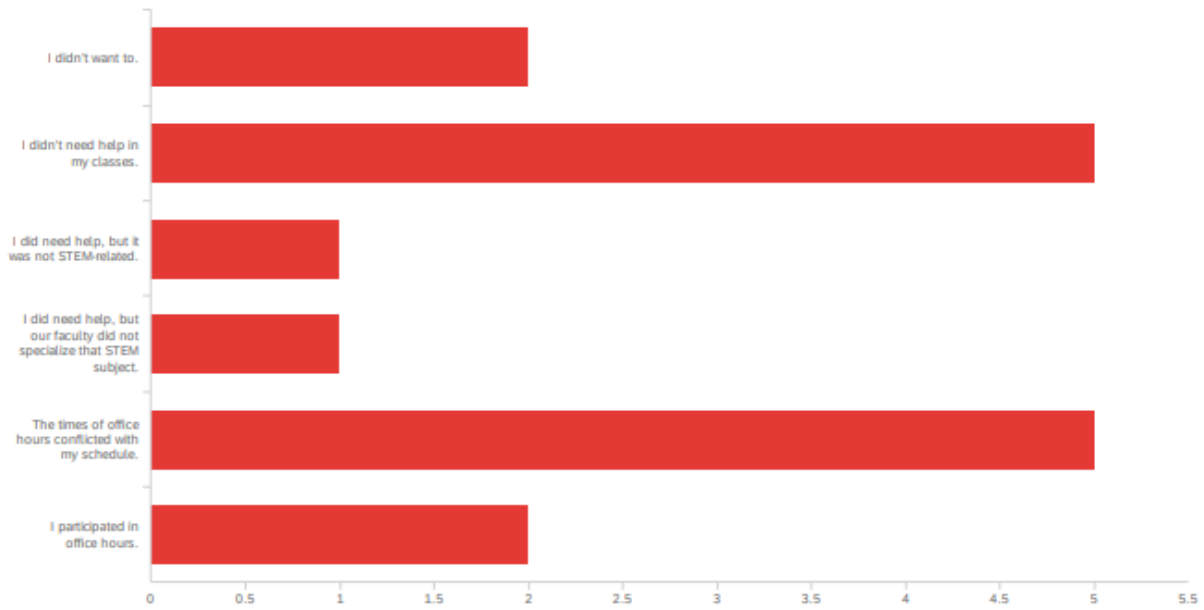
Q12 - If these types of events were offered over Zoom, which events would you be least interested in participating in?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	If these types of events were offered over Zoom, which events would you be least interested in participating in?	1.00	4.00	3.63	0.86	0.73	16

#	Field	Choice Count
1	Academic events (Ex: meet and greet with STEM faculty, study parties, research panels, writing workshops, etc.)	6.25% 1
2	Social events (Ex: raft night, cookie decorating, Zumba, yoga, etc.)	6.25% 1
3	Service events (Ex: Making dog toys for the animal shelters, coloring paper bags for Kid's Food Basket or Meals on Wheels, etc)	6.25% 1
4	Connect to campus (Ex: Presentations from campus services and offices like Money-Smart Lakers, the counseling center, the Office of Undergraduate Research, etc.)	81.25% 13

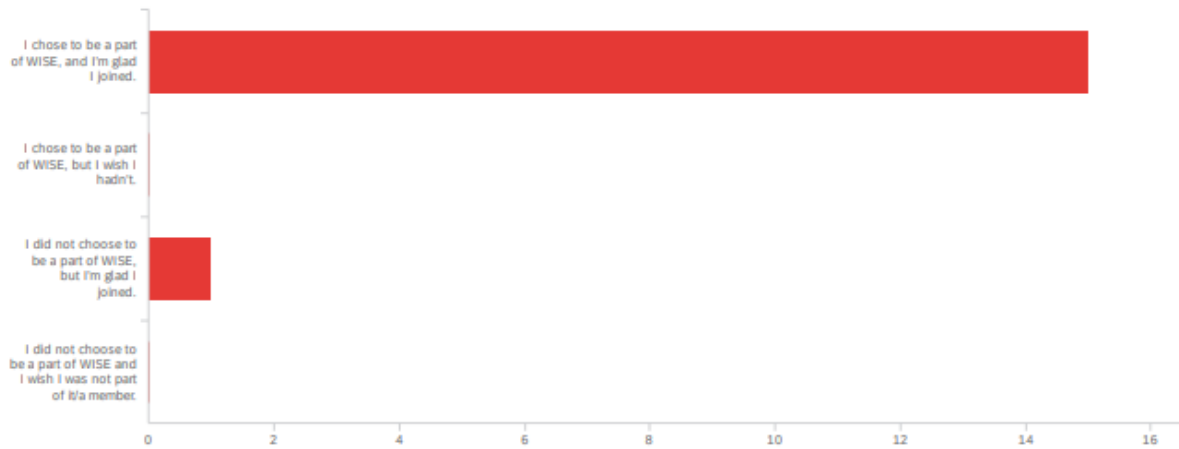
Q13 - If you did not attend office hours this year, which option would best describe why?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	If you did not attend office hours this year, which option would best describe why?	1.00	6.00	3.50	1.73	3.00	16

#	Field	Choice Count
1	I didn't want to.	12.50% 2
2	I didn't need help in my classes.	31.25% 5
3	I did need help, but it was not STEM-related.	6.25% 1
4	I did need help, but our faculty did not specialize that STEM subject.	6.25% 1
5	The times of office hours conflicted with my schedule.	31.25% 5
6	I participated in office hours.	12.50% 2

Q14 - Did you choose to join WISE? How do you feel about participating in it now?

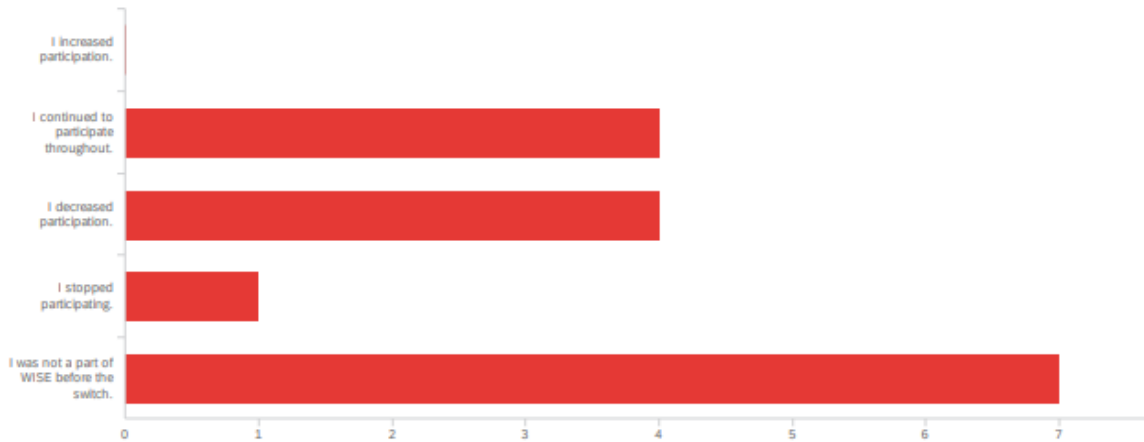


#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Did you choose to join WISE? How do you feel about participating in it now?	1.00	3.00	1.13	0.48	0.23	16

#	Field	Choice Count
1	I chose to be a part of WISE, and I'm glad I joined.	93.75% 15
2	I chose to be a part of WISE, but I wish I hadn't.	0.00% 0
3	I did not choose to be a part of WISE, but I'm glad I joined.	6.25% 1
4	I did not choose to be a part of WISE and I wish I was not part of it/a member.	0.00% 0

16

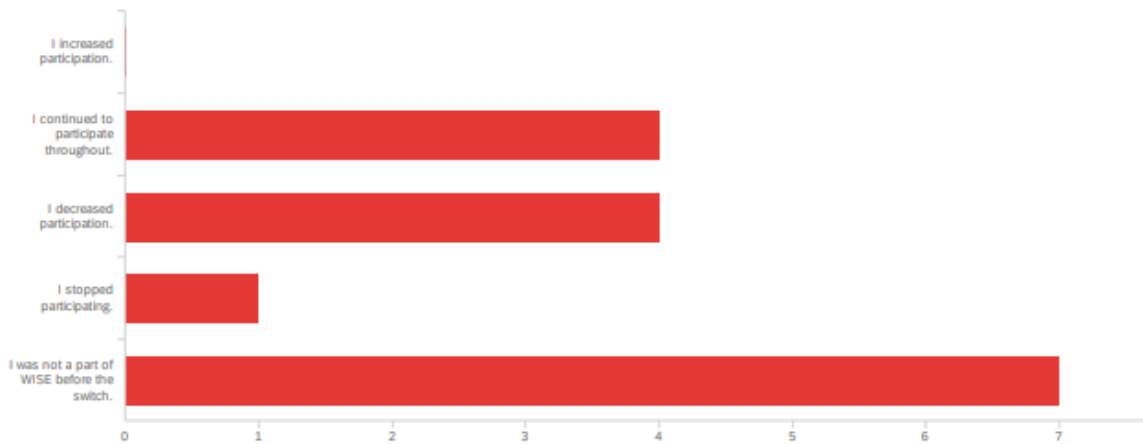
Q15 - If you a part of WISE before in both online and original, how has the switched effected your participation in WISE?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	If you a part of WISE before in both online and original, how has the switched effected your participation in WISE?	2.00	5.00	3.69	1.26	1.59	16

#	Field	Choice Count
1	I increased participation.	0.00% 0
2	I continued to participate throughout.	25.00% 4
3	I decreased participation.	25.00% 4
4	I stopped participating.	6.25% 1
5	I was not a part of WISE before the switch.	43.75% 7
		16

Q15 - If you a part of WISE before in both online and original, how has the switched effected your participation in WISE?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	If you a part of WISE before in both online and original, how has the switched effected your participation in WISE?	2.00	5.00	3.69	1.26	1.59	16

#	Field	Choice Count
1	I increased participation.	0.00% 0
2	I continued to participate throughout.	25.00% 4
3	I decreased participation.	25.00% 4
4	I stopped participating.	6.25% 1
5	I was not a part of WISE before the switch.	43.75% 7
		16

Q20 - What did you know about WISE before being placed into it?

What did you know about WISE before being placed into it?

GVSU Website

Nothing much

Nothing, I joined when I was a freshman since it was geared towards women in Stem majors

N/A

Before going into WISE I was told this was a building of like minded (study's focused) women. There would be faculty and student help when needed. Also this would be a good growing opportunity.

That it offers private and group tutoring available only to WISE students. And there are field trips.

Very little, I was a transfer student so knew very little about GV really before coming here

All women dorm for those in stem

That it was an all girls dorm for stem majors, and that we could study together, and it was more of a family environment

House for Women in Science and Engineering. Did not realize the faculty connections and social events also implied!

I knew it was for women in STEM and one of my professors was leading it

I didn't know much. I just knew it was a women's dorm for STEM majors

It was a place of science for women in stem.

not much

Q16 - What would you like to see in the program in upcoming semesters?

What would you like to see in the program in upcoming semesters?

More in person activities

I'm person events if possible

N/A

N/A

N/A graduated

Field trips. Maybe social distance at the zoo or social distanced hiking.

More office hours

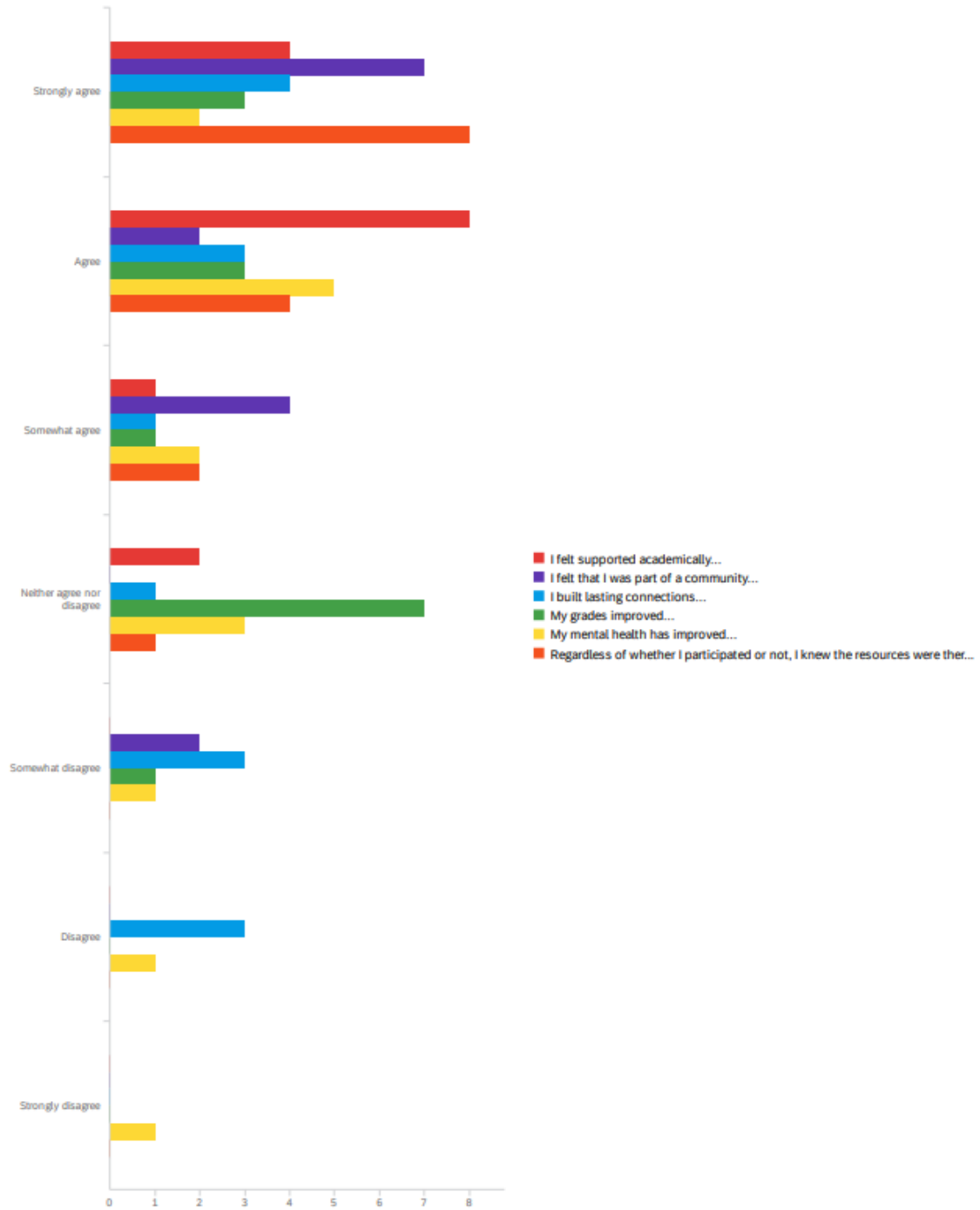
I honestly wish we could stuff in person, but I know that's just not possible right now. All of us being together are some of my favorite memories.

I will not be participating but I do hope there are still fun events in place and study help for those in need.

More community building activities.

More participation from others.

Q17 - As a result of WISE:



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	I felt supported academically...	1.00	4.00	2.07	0.93	0.86	15
2	I felt that I was part of a community...	1.00	5.00	2.20	1.38	1.89	15
3	I built lasting connections...	1.00	6.00	3.33	1.96	3.82	15
4	My grades improved...	1.00	5.00	3.00	1.32	1.73	15
5	My mental health has improved...	1.00	7.00	3.20	1.72	2.96	15
6	Regardless of whether I participated or not, I knew the resources were there if I needed them...	1.00	4.00	1.73	0.93	0.86	15

#	Field	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
1	I felt supported academically...	26.67% 4	53.33% 8	6.67% 1	13.33% 2	0.00% 0	0.00% 0	0.00% 0
2	I felt that I was part of a community...	46.67% 7	13.33% 2	26.67% 4	0.00% 0	13.33% 2	0.00% 0	0.00% 0
3	I built lasting connections...	26.67% 4	20.00% 3	6.67% 1	6.67% 1	20.00% 3	20.00% 3	0.00% 0
4	My grades improved...	20.00% 3	20.00% 3	6.67% 1	46.67% 7	6.67% 1	0.00% 0	0.00% 0
5	My mental health has improved...	13.33% 2	33.33% 5	13.33% 2	20.00% 3	6.67% 1	6.67% 1	6.67% 1
6	Regardless of whether I participated or not, I knew the resources were there if I needed them...	53.33% 8	26.67% 4	13.33% 2	6.67% 1	0.00% 0	0.00% 0	0.00% 0