

International Students Face Unique Challenges in Their College Transition: Lessons Learned From a Discipline-Specific Support System

Ms. Haritha Gnanasegar, Virginia Polytechnic Institute and State University

Mrs. Tawni Paradise, Virginia Polytechnic Institute and State University

Tawni is a fourth year Ph.D. candidate in the Department of Engineering Education at Virginia Tech. She holds a B.S. and a B.A. in Industrial & Systems Engineering from The University of San Diego in San Diego, CA. Drawing on previous experiences as a mathematics and engineering teacher, her current research interests include studying the disconnect between home and school, with a specific emphasis on elementary students. She continues to pursue these research interests with the support of the NSF Graduate Research Fellowships Program.

Ms. Ramida Theeravachirakul, Virginia Polytechnic Institute and State University

Ramida is an undergraduate student majoring in Computer Engineering at Virginia Tech and intends to graduate in 2023. She is an international student from Thailand. She involves in the International Student Support team to help international students transitioning to the university.

Soumya Khanna, Virginia Polytechnic Institute and State University

Miss Margee Pipaliya, Virginia Polytechnic Institute and State University

I am an undergraduate student majoring in Aerospace Engineering.

International Students Face Unique Challenges in Their College Transition: Lessons Learned From a Discipline-Specific Support System

Keywords: international students, transitional experience, undergraduates, engineering

Abstract

International students are growing in number throughout universities in the United States, but many of them are not receiving the support that they need to transition to both a new country and college life. In their transition to college, international students face unique challenges when compared with their domestic peers. Many colleges have international centers on campus that aim to serve and support international students with their needs. Not only are these facilities often underfunded and overworked, but they often don't provide discipline-specific support for students. International students pursuing Engineering may experience different challenges than those who are pursuing a degree in Business or English. This realization led to the formation of the International Student Support Team (ISST) within the College of Engineering at a large, land grant, mid-Atlantic university. ISST has a mission to provide targeted support to international engineering students so that they can do well-pursuing engineering majors at the university and a vision to better the international student experience at the university, including their transition into engineering and the United States. Over the last three years, this team has engaged several engineering international students in conversations, support sessions, mentoring, social events, and otherwise. The purpose of this paper is to understand how engineering international students are experiencing their transition to college and to what extent ISST has supported their transitional experience. Interviews with freshman, sophomore, junior and PhD international engineering students will be conducted with questions related to their transitional experience during their first semester in college and the role of ISST in their transition. Through informal conversations, we have found that most international students faced challenges during their first semester and that they were unsure how to seek help for these challenges. Students have also shared that ISST supported them with their career and academic challenges, but that they do not feel ISST addressed their desire to connect with American students. Alongside the interview results, this paper will also present details of ISST and its offerings for students. This paper could be useful to colleges looking for manners in which they can fully support international students, specifically at the discipline-specific level.

1. Introduction

The transitional experience to college brings lots of firsts for all undergraduate students, as they are navigating a new educational system and are often moving out on their own or to a location away from home. International students have even more challenges to face and overcome as they transition to college. Not only do international students have to travel further to school and face being far away from home, but they also have to navigate immigration and visa requirements, as well as adjust to a new culture and atmosphere. It is well known that international students have greater adjustments when compared with domestic students, to face when transitioning to college and most schools have existing resources and support for international students [1-8]. Many schools have an international student office that serves as the main point of contact for international applicants and hosts orientations upon their arrival. Student groups, typically arranged by home country, are also very prevalent on campus and are heavily utilized by students. Despite all the efforts to support international students, there is still important information that is not readily reaching international students. For example, international students in China often have a harder time corresponding with organizations at the university before they arrive due to the limitations of using Gmail in China. Due to this many opportunities that students should apply to before they arrive on campus are largely unavailable to our students from China. While international offices on-campus work hard to navigate and address barriers for our international students, there is more that universities can do to support our international students. The purpose of this study is to understand the experiences of eight international students in their transition to both college life and the United States culture. This study is conducted in the context of a discipline-specific organization aimed to support international students.

2. Literature Review

International students provide a benefit to our society both economically and by providing unique backgrounds and perspectives to our schooling systems and beyond [1,2,9]. However, our schools are falling short of providing the necessary support systems for these international students, and in most previous years, we have seen their enrollment decrease [10]. It is well-known in the existing literature that international students face different challenges when compared with domestic students [11]. One of the challenges includes engaging in a new

academic environment [2] and the academic challenges that come alongside that. These challenges can be discipline-specific and are often unaddressed by the larger school-wide support systems. For example, understanding where to get tutoring support for specific technical classes or the differences between laboratory and lecture-based courses. Discipline-specific academic advisors do offer this support to students, but many international students aren't sure what support they should be seeking in terms of academic items. Additionally, items such as mismatched writing strategies from a home country to the country of study (ie. mismatch between Australian and China writing styles) may cause complications for students who are in a writing-intensive program [1].

Other challenges include engaging in a new social environment [10] requiring students to socially and emotionally adapt while potentially leading to culture shock or cultural clashes [1, 3,9,12]. This can be aided with supporting relationships among international peers or with domestic students, as these forms of mentoring are successful in previous literature [4,5]. Most mentoring opportunities discussed in the literature focus on connecting international students with other international students and do not engage much with domestic students, but the desire to connect with domestic students is highlighted in [10]. Additionally, international centers and mentoring opportunities may not focus on connecting students with others in their intended discipline of study.

While related to academic challenges, a challenge worthy of its section because of the prevalence of it is the associated complications with English being a second language [6,7,8]. Many students often learn some English in their K-12 schooling, but it is commonly their second language and academic challenges arise from miscommunication with instructors. However, there are pedagogical strategies that work more effectively for emergent bilingual students that are not learning in their primary language [7], so international centers on campus can be working with teachers to offer professional development which shares and reflects on these strategies.

These challenges that international students often face are important because most academic failures can be traced back to the first year of transition for an international student [13]. Additionally, all of these challenges can make it more difficult for students to feel a sense of belonging on campus, and this is important because this supports students' engagement and motivation in their studies [10, 14].

While most universities offer some support to students, many large universities have one specific international organization or center that is meant to meet the needs of all international students. These large centers focus on the broader student experiences, ensuring that students have access to legal information they need about visas, employment, enrollment, etc, and also providing general social or support sessions. These traditional means of supporting international students are campus-wide and do not focus on major-specific support for students. While this is useful in supporting some elements of an international students transition, such as identifying and completing necessary enrollment paperwork, it does not support other necessary items, such as identifying where their dormitory is located on campus, what programs they should be applying for before arriving on campus or aiding them in the development of a discipline-appropriate resume. Due to this, there is a benefit of discipline-specific information and support for international students. Also, to increase international students' sense of belonging and address social challenges that students may have, a student-led support team can help support student relationship building. Our team, ISST, is both discipline-specific and student-run, and this research paper will discuss how international students perceive its effectiveness in their transition.

3. Background

To better understand the context of this research, greater details for the ISST team are provided and a discussion of the changes for our international students due to COVID-19.

3.1 International Student Support Team

The International Student Support Team (ISST) is a student-led group with 9 elected positions aimed to support international engineering students at mid-Atlantic universities. Our mission and vision are:

- **Mission:** Our team works to provide targeted support to international engineering students that are members of the engineering community so that they can do well-pursuing engineering majors at the university
- **Vision:** Better the international student experience at the university, including their transition into engineering and the United States

To support our mission and vision, we aim to continuously monitor international student needs and address them through targeted events and resources. Our officers monitor student needs with continuous communication and open lines for feedback and reflection. We provide support to international students for their arrival to the US and the college campus. In the past, we have hosted a variety of social and professional development events to engage with international students throughout the academic year. Additionally, recruitment events have helped us increase the involvement of international students in engineering-specific opportunities, such as applying for an engineering-specific dormitory, generally offered by the engineering diversity center. Moving forward, we are looking to help engage and network international students with faculty. In this research, we interviewed 8 international students with varying involvement in the engineering diversity center which allowed us to compare and contrast their experiences.

3.2 Engineering Diversity Center

The ISST works alongside the engineering diversity center at the university and has a mutually beneficial relationship. This engineering diversity center has existed for almost 30 years and is focused on enhancing the diversity among engineering students at the university and supporting these students on their pathways to an engineering degree and beyond. They have many well-established support programs, such as an engineering living learning community (LLC) and a peer mentoring program, that ISST helps promote to international students on campus. While this center is not the focus of this research, much of the work that ISST focuses on is integrated with the desires and support of this diversity center and it would therefore be incomplete to exclude their information.

3.3 COVID-19 Setting

To provide greater context to the setting in which this research was conducted, we must acknowledge the COVID-19 pandemic and the situations in which that forced international students into. Due to the COVID-19 pandemic, incoming international students were admitted into a special virtual program designed to cater to their needs called Bound. This allowed students to take asynchronous classes while being in various time zones. While being at home was safe and comfortable, it was also difficult for students to make connections with peers and participate in extracurricular activities. Despite the virtual nature of most meetings and events,

being in a time zone more than 7 hours ahead made it inconvenient for most students to engage in these events.

Due to the virtual program and the pandemic, incoming students had different schedules to enter the US. Seeking assistance before the pandemic was simple since the entire class of international students would have the same procedures before arriving in the US. However, in this last year, students had to worry about the quarantine procedures depending on their home countries. Our team focused on providing interpersonal support to the incoming students through our own Peer Mentoring initiative. In this initiative, we paired one member of our team with an incoming international student to give them a point of contact for questions or concerns before they arrived in the US. While this research was planned before the pandemic, the changes in our support systems and the focus of our team due to the pandemic were necessary items to consider in our research. This led us to include COVID-19 specific interview questions, and the results from these questions are discussed in their section within the results.

4. Participants

For this study, we interviewed 8 participants in various academic standings enrolled in engineering programs at a mid-Atlantic US university. The participants comprise 4 female and 4 male students who hail from 6 different countries. Table 1 provides information on the students interviewed with their home country, grade, and involvement.

TABLE I
PARTICIPANT BACKGROUND INFORMATION

Pseudonym	Home Country	Grade	Engineering Diversity Center Involvement
Rohan	India	Sophomore	Peer Mentoring
Meghna	India / Dubai	Junior	Engineering LLC
Aleena	Indian Singaporean / Malaysia	Freshman	Engineering LLC, ISST
Varun	India	Freshman	None
Vanessa	India	Sophomore	Engineering LLC, ISST
Nanshan	China	2nd Year PhD	None
Vishal	India	Freshman	Peer Mentoring
Pat	Thailand	Sophomore	None

5. Research Methods

Within this research project, each participant participated in a semi-structured interview that spanned from 15 to 60 minutes. The interviews were conducted online, through audio recording, and transcribed. The interview protocol that was used is shown in Appendix A and included questions about students' transitional experiences, including their support systems and resources utilized, as well as elements that would have made their transition more effective. In analyzing the interviews, we used thematic analysis to code the student responses and develop prevalent themes that traversed across interviews [15]. Thematic analysis is defined by [16] as a method of identifying, analyzing, and reporting patterns within qualitative data. In addition, [17] state thematic analysis as a generic qualitative method that allows data to emerge from patterns after implementing open coding.

5.1 Analysis

The analysis steps that we used are described below, including details on the analysis conducted by the primary and the secondary coder:

1. Individually read all interviews and take memos about possible themes present

2. Based on memos and individual readings of the interviews, collaboratively develop an initial codebook
3. Choose two of the interviews that were not conducted by the coders and individually apply the initial codebook to these interviews. Some sections of the interview were assigned two codes.
4. Meet with the second coder to discuss assigned codes for the two initial interviews and come to an agreement on any sections that were coded differently
5. Refine the codebook accordingly
6. Split the remaining interviews such that each of the coders is individually coding 3 interviews

While all themes and results were discussed among the entire research group, the two coders were the primary researchers responsible for developing and refining the codebook and applying the codebook to the interviews. The initial codebook consisted of 8 themes. While there was a large agreement, conversations with the two coders resulted in two additional codes being added to the codebook (positive experiences and experience with the pandemic). Conversations between coders resulted in the refinement of the theme of cultural fit and traveling/ flight. The refined codebook consisted of 7 themes, and the definitions of these themes were further clarified as a result of collaborative discussion with the group.

5.2 Positionality

Before discussing the results that we found from our thematic analysis of the interviews, it is important to position both the purpose of this research and the identities of the researchers. This research was conducted as an evaluation tool for ISST, and therefore has some questions specifically related to our team. Some of the results may therefore be limited in applicability and generalizability. However, our team of researchers consists of many international undergraduate students who have themselves gone through the transitional process of both coming to the United States and transitioning to college in the U.S. This background makes them more likely to identify themes that they can relate to or have experienced themselves previously, but also allows for them to provide some added context and potential discussion around some of the prevalent themes discovered.

6. Results

After reading and analyzing all the interview transcripts, a codebook was developed representing the themes present in multiple interviews with our participants. Table II presents the 10 themes identified across the 8 interviews conducted along with the description of each theme.

TABLE II
CODEBOOK OF THEMES

Category	Description
Multiple external support systems	Students described receiving support (for various challenges or adjustments) from multiple support systems (upperclassmen, external organizations, university organization) and the benefits associated with many support systems
Receiving target support through events and online presence	Students described receiving support specifically for international students from events that they attended or with online resources that they found or that were distributed to them. Attending ISST events were included in this category, but are not comprehensive
Classes & structure	Students identified challenges that they faced that were related to their classes or the structure of their classes. Some examples of this include struggling with the teaching mode or experiencing a linguistic barrier.
Homesick	Students identified challenges that they faced that were related to struggling to be away from family or their home country.
Traveling/flight	Students identified challenges that they faced that were related to traveling to the university from their home country and jet lag.
Layout of university	Students identified challenges that they faced that were related to the layout of the university. Some examples of this include being unaware of the building and campus layout.
Cultural fit	Students described varying ways of trying to fit into or adjust to the American culture throughout their transition to college in the United States
International student friends	Students explain how having friends who are also international students helped develop social circles and get a sense of the local community.
Positive Experiences	Students shared that they are enjoying their experiences in a specific organization or the U.S.
Experience with the Pandemic	Students describe their experiences with taking courses during the COVID-19 pandemic. Experiences include doing engineering classes online, navigating a time zone difference, taking classes at night time, or being aware of travel restrictions.

6.1 Code count

In analyzing the interviews using our constructed codebook, we found the most prevalent code was ‘Multiple support systems’ and the least prevalent code was ‘Homesickness’ and. Even though homesickness was present in only one interview, the researchers discerned a personal connection the interviewee had with the interviewees and was comfortable sharing an intimate detail. Table III below shows the overall number of times each code was applied to the interviews.

TABLE III
CODE COUNTS

Category	Count	Number of Interviewees
Multiple external support systems	31	6
Cultural fit	3	3
Classes & structure	5	4
Homesick	1	1
Traveling/flight	2	2
Layout of university	2	2
Receiving target support through events and online presence	30	6
International student friends	3	2
Positive Experiences	6	3
Experience with the Pandemic	12	5

6.2 Themes

To further explore our results here, we discuss our findings within four broad categories the codes have been organized into - transitional challenges, cultural challenges, receiving support through multiple support systems, and experience with COVID-19.

6.2.1 Transitional Challenges

Some of the transitional challenges that were described in the interviews include being unaware of campus buildings and layout, traveling to Blacksburg and jet lag, and struggling to be

away from family. Students expressed these are challenges they face during the first two weeks of coming to the US.

At least three students emphasized feeling lost on campus, being late to class, and not being able to find campus buildings. Students explained it was stressful as they did not know whom to contact or ask for help. A student mentioned:

“But let me be very honest, on my first day of classes, I was completely lost. I had lost on campus. I have no idea where my buildings were and where my classes will be held. So I was kinda nervous. I was running late for my classes.”

Students also expressed experiencing difficulties traveling to Blacksburg mentioning things like airport wait times, traveling with luggage, and canceled flights. A student mentioned:

“It's horrible for me because it's my first time flying alone like I flew from Thailand to Qatar and from Qatar to Pennsylvania and then my flight from Pennsylvania to Roanoke was canceled. I mean the fastest flight is the next day. So I had to stay there for one night and I don't know. I just had to do everything on my own and I was scared and I didn't know anyone. So it's awful.”

Additionally, students revealed enduring homesickness and having an emotional wave due to being away from home and parents, and not having the means to visit them often. A student mentioned her transition as:

“So were times when I was like no, I just wanna leave. I don't want to stay here But I just wanted to give up, give up everything, just go back home like catch the next flight to Dubai. That's where I currently live. But yeah. But then it was kinda like there was a lot of like this huge emotional wave going up and down so.”

From these experiences, we understand that while students are transitioning, they face several challenges during their initial weeks and beyond. Initially, there is a feeling of being lost, scared, and helpless. Over time they become accustomed to the lifestyle and discover ways to face these challenges with other international students.

6.2.2 Cultural Challenges

From our interviews, we recognized cultural challenges as student experiences with food, language, academic and social community. During the interviews, students mentioned that

language was one of the first challenges they experienced and despite having a great experience there were instances they did not understand conversations. One of the students mentioned:

“I hang out with my friends on campus and search for a restaurant. What was tough for me most was that I couldn't understand what people said because of language.”

Additionally, we observed that students experience this barrier in both academic and social settings and find it easier to communicate with students from their home country. As one of the students mentioned:

“Mostly academically, in some classes, we need to make a group for a project so incase I find students from my country it is easier to communicate and build up to something. Also, I find my comfortable space with mostly students of India.”

Aside from language as a barrier, international students also mentioned the food was a concern and a struggle. At least two students stated they had to find alternatives for traditional food and they had concerns with their dietary restrictions. One of the students mentioned:

“I don't know where to get vegetarian food on campus like I know for me that was one of the biggest concerns. I'm like I don't know where you get vegetarian food because I thought [university] dining was good. But then they served like only meat.”

Another student found an alternative to this struggle with her friends. She says,

“One struggle that I face is that I could not find any Indian food on campus. And the one thing that I did was collected a few friends of mine and then all of us used to cook together in the kitchens that were present in the dorm rooms.”

From the interviews and experiences, we understand international students discover ways to overcome them but some of them are everyday challenges they face like the linguistic barrier.

6.2.3 Receiving Support through Multiple Support Systems

In more than two-thirds of the interviews conducted, students expressed their transition to the US and university was possible through the presence of multiple support systems and receiving targeted aid. They mentioned having connections made even before coming to the US has been greatly beneficial, having information about campus and serving them as an emotional pillar. A student mentioned their experience with the international student support team as:

“I think this was like the emotional like I think the most supportive pillar, I had when I was moving in. I don't have any friends in the US, and I don't have any family there so I

didn't know who to talk to, like, I didn't know who will understand like what I'm going through, but then [the engineering diversity center] came in and like taught to students from different backgrounds. So everyone was like trying to accommodate so I did connect to people as I talked. I think this was the most supportive team like I have seen”

Some students mentioned it was beneficial to have a mentor assigned as they were introverts and then they would branch out later. We see that in two of our interviews where students mention:

1. *“To be honest, I was a very much introvert when I came I didn't know a lot of people. And second, it was just the fact that I was a little scared asking question 'cause I was like, oh, maybe I might sound stupid or myself dumb. And because of that, the only person I would go to was my mentor in [Engineering LLC]. Oh man, she got through. She was able to assist me with anything I would ask. After that, I started making friends, and then I just kept going to them 'cause I ask all along. My initial time every day I think she was one person I would go to and get help whenever I needed help.”*
2. *“Like if it was like a common question I would rather approach my RA or like I would just talk about regarding it with my friends and work it out. So that's all. I guess I read and stuff it online. And I tend to discover by myself, stuff like I usually don't take help from others regarding these things.”*

We observed a similar trend of having a support system with international students who began their undergraduate journey online due to the pandemic. One of the students says:

“So I joined the AICHE and we have a mentoring group there as well. So I would go to my mentors there. And then I also have like [the engineering diversity center] mentors. So I had a bunch of people that I could just reach out to depending on what my question was related to. I had a really good support system, which I appreciated because I mean, being locked up in my room is not ideal.”

6.2.4 Experience with the Pandemic

In our interviews students mentioned they have mixed feelings about the pandemic. Students who began their college journey online due to the pandemic mentioned their transition was as smooth as it could get virtually, but the downfall was less interaction with students and campus life.

A freshmen year student mentioned:

“So my first week it was they designed a beautiful course with [Bound] it's FYE course. So that was like the initial start getting to know the university and then they assigned a peer mentor to every group. So we were like, Four or five people and then the peer mentors. Like the first to go to the tab like that was the first source of information. But the only thing that was negative I didn't meet a lot of people. I didn't interact with a lot of people. I didn't interact with a lot of professors, I know it's easier to email them, but it's nice being in a class. I understand like they really can't do anything about it”

Students who were already enrolled at the university mentioned they did not have direction when the pandemic started, about how they can get back home, quarantine process, etc.

A student mentioned:

“It is not been quite pleasant. I feel my grades were fine but due to the pandemic I have to be at my home and I feel I didn't get knowledge as much as I could get being on campus. Also, this was my first semester in my major in aerospace engineering, without this pandemic I think the transition would have been better as I could be in person and get to join some design team, know my professor well get my doubts cleared just after the class and didn't have to face issue with the time difference. As I mentioned earlier like getting the information about what all documents do I need especially because of the pandemic like getting a COVID test or getting my i-20 printed or will that work on the phone. How many days will I have to quarantine? Yeah! Mostly just getting all these answers.”

From the student testimonies, we observed, most international students experience transitional and academic challenges and they overcome these with multiple support systems they feel comfortable in during their time at college. In the interviews, it is also observed that students already enrolled at the university of study for at least one semester had different experiences with the COVID-19 pandemic when compared to international students who began their college experience online with an FYE course.

7. Discussion

If we holistically consider what students shared with us about their transitional experience, we can summarize that they had varying levels of nervousness when coming to the United States, that their level of connectedness largely depended on the number of events they

attended and relationships they formed before coming to the United States, and that they often have travel-related challenges that they had to navigate. While the majority of our international students expressed being nervous to come to the United States, some expressed excitement and we believe that the level of nervousness may be attributed to the personal domain and attitude of the individual. These personal attributes may be their social desires, their ability to build connections, or the general level of uncertainty that they are comfortable with. It also seemed that the nervousness of the individual was related to how connected they felt to the campus and to the United States, where individuals who had been to many events before attending the university or who had made many connections with other individuals before attending the university were less nervous about attending.

Due to the COVID-19 pandemic, international students had more opportunities to engage with the university generally, meet other individuals at the university or attend events before coming to the university for the first time since all of these opportunities were provided in a virtual format. Regardless of this, all students that we interviewed that have already traveled to the university in the United States expressed challenges related to traveling, and specifics of these are discussed in the results section. One particular support system that many students mentioned was ISST, and they identified the types of events that directly addressed their challenges or needs as they transitioned to life in the United States. While these events were mentioned by most participants, it should be noted that the older participants were less likely to identify specific events that helped them transition. This was not surprising as our team has been significantly expanding our efforts over the past 3 years.

8. Conclusion

This paper performs a thematic analysis on a qualitative method to study international student experiences in US universities. The student transitional process was observed and documented in detail to support the mission and vision of the International Student Support Team that is to provide targeted support for international engineering students and better their experience at including their transition into engineering and the United States.

However, a few themes identified relate to both international students and students from the US such as enduring homesickness, experiences during the pandemic, adjusting to college classes etc.

Our team found two overarching threads from this research that are meaningful contributions to the literature around the international student transitional experience. First, international students appreciate making a connection or having a support system before they get to campus. A student mentioned:

“Some things that I’ve missed out than my other friends who were international students too didn’t really have like they caught up on those things and that made the transition easy first and most is actually connecting to people on social media before getting to campus. Like I know, many of our friends met through Facebook before getting out to campus and they have initially spoken to each other, or chatted with each other like got to know if they were within the same country of the same place. So I know people from Mumbai who met with each other in Mumbai and then before they could even get back before they could get to campus, which I didn’t do because first I never had a Facebook account. I got a Facebook account just because of University.”

Second, the targeted support of ISST is appreciated by students because we studied the team and provided a space for international students to meet fellow international students and interact with them. Additionally, the events such as ‘Getting to know Blacksburg’, ‘Resume Workshop’ and ‘Game Nights’ provided them with a space to interact with upper-class international students and ask questions without feeling out of place. A student mentioned:

“The international support team was really helpful for me personally, and like some of my other friends because we all like a lot of us as we met through the first game night that we had where we played ‘Scribble’, I still remember that.”

Given that this research was partly conducted as an evaluation tool for ISST, we have learned that international students appreciate having a platform to connect with other international students, freshmen, and upperclassmen, before arriving at the university and having social mixers. From our study, the team would like to provide students with campus tours when they arrive and resources to navigate their own tours such as walk-through maps and folks to reach out with questions.

Future research around this topic could include identifying how to get students more engaged with activities before they arrive on campus to ease their nerves. We plan to continue the work at the International Student Support Team and expand our support through collaborations with other international offices at the university.

9. Limitations

The limitations of the study are related to bias in the thematic analysis since international students were analyzing so there may be bias in interpretation while there is a benefit to the same as well. Additionally, due to the nature of the work as evaluation and using the thematic analysis procedures, there is a lack of framework guiding our work. The other limitation of the study is related to extrapolating our work at different universities. Our research is based on 8 interviewees in undergraduate and graduate engineering international students enrolled at a large university in the mid-Atlantic region. Given all universities have different resources for their international students the transferability of results to other universities may be limited. Additionally, the maturity levels of the students in the study has a wide difference from a freshmen in college to a PhD student which can lead to having different expectations of college. Another limitation is that most of the interviewees are from Asian countries. Hence, the study doesn't bring forth the experiences of international students from other backgrounds.

Citations

- [1] A. Prescott and M. Hellsten, "Hanging together even with non-native speakers: The international student transition experience," in *Internationalizing higher education*. Springer, 2005, pp. 75–95.
- [2] J. Wang, "A study of resiliency characteristics in the adjustment of international graduate students at american universities," *Journal of Studies in International Education*, vol. 13, no. 1, pp. 22–45, 2009.
- [3] S. L. McKay, *Teaching English as an international language: Rethinking goals and perspectives*. New York: Oxford University Press, 2002.
- [4] R. B. Burns, "Study and stress among first-year overseas students in an australian university," *Higher education research and development*, vol. 10, no. 1, pp. 61–77, 1991.
- [5] J. Austin, L. Covalea, and S. Weal, "Going the extra mile-swinburne, lilydale's mentor program," in *16th Australian International Education Conference*. Citeseer, 2002.
- [6] S. Watkins and R. Green, "Speaking and writing proficiency of international graduate students in elective, mentoring environments," *Journal of Engineering Education*, vol. 92, no. 2, pp. 147–154, 2003.
- [7] S. Krashen, "Principles and practice in second language acquisition," 1982.
- [8] M. Baynham, "Academic writing in the new university." in *Integrating Theory with Practice in Second Language Teaching*. The Hong Kong University of Science and Technology, 2002.
- [9] G. L. Downey, J. C. Lucena, B. M. Moskal, R. Parkhurst, T. Bigley, C. Hays, B.K.Jesiek, L. Kelly, J. Miller, S. Ruff, et al., "The globally competent engineer: Working effectively with people who define problems differently," *Journal of Engineering Education*, vol. 95, no. 2, pp.107–122, 2006.
- [10] H. Murzi, M. Greene-Havas, and J. Woods, "Understanding international students' barriers in their first year at a US university," in *SEFI 47th Annual Conference: Varietas Delectat... Complexity is the New Normality, Proceedings*. European Society for Engineering Education (SEFI), 2019, pp. 1783–1793.
- [11] Y. Kwon, "Factors affecting international students' transition to higher education institutions in the United States," *College Student Journal*, vol. 43, no. 4, 2009.
- [12] S. Levy, M. Y. Osborn, and M. M. Plunkett, "An investigation of international students' academic and social transition requirements," in *Pacific Rim First Year in Higher Education Conference (FYHE) 2003*. University Art Museum, University of Queensland, 2003, pp. 1–10.
- [13] C. McInnis, "Researching the first year experience: where to from here?" *Higher Education Research & Development*, vol. 20, no. 2, pp. 105–114, 2001.
- [14] R. M. Carini, G. D. Kuh, and S. P. Klein, "Student engagement and student learning: Testing the linkages," *Research in higher education*, vol. 47, no. 1, pp. 1–32, 2006.
- [15] V. Clarke, V. Braun, and N. Hayfield, "Thematic analysis. In: Smith, J.A., editor. *Qualitative Psychology: A Practical Guide to Research Methods*, pp. 222-248", 2015.
- [16] V. Clarke and V. Braun, "Thematic analysis," in *Encyclopedia of critical psychology*. Springer, 2014, pp. 1947–1952.
- [17] C. Robson and K. McCartan, *Real world research*. John Wiley & Sons, 2016.

Appendix A:

Semi-Structured Interview Protocol

Thank you for agreeing to meet with me today to discuss your transitional experiences as an international student studying engineering. To reiterate, this interview will be recorded, for the study that you read about in the consent form. The main aim of this study is to support the development of the International Student Support Team at the university. Do you have any questions about the study before we get started?

Before we start I would like to get a bit of background information from you.

- Are you a member of the [engineering diversity center] community or have you ever been a member of the [engineering diversity center] community? In what way have you been involved with [the engineering diversity center]?
- What do you consider to be your home country?
- What year are you currently in and what major are you studying?

Please think back to your first week in the U.S. and at the university. Could you tell me about your first week?

- Who did you go to when you had a question?
- Did you struggle with anything? If so, how did you resolve this?
- How did you learn about what the transition process to college would be like?

What has been your most positive experience so far at college?

- How did you get involved with or learn about this experience?

What have been your least favorite experiences so far at the university?

- Do you think this could have been avoided?

Have you been involved with the International Student Support Team?

If YES,

- Can you describe your experiences while being a part of the International Student Support Team?
- Did it support your transition?
- Who do you go to within the community when you have a question?
- What aspects of this community have been helpful?

- Did you attend any of the events and what was your experience like in them?
- What would you change about the community to best support you?

If NO,

- Do you think you would have benefitted from a community specifically focused on supporting international students in engineering at the university?
- What aspects of an international student community do you think would be the most helpful to you?
- What events could this community hold that you would have found useful, interesting, or fun?
- Who do you typically go to at the university when you have a question?

How has your transitional college experience been impacted by the COVID-19 pandemic?

- Are there specific support elements that would have been helpful to you in dealing with the challenges due to COVID?

Are there things that you are struggling with currently that you don't know how to address?