

Cultural Adaptation and Advising Dynamics: Insights from International Engineering Graduate Students

Himani Sharma

Dr. Ann F. McKenna, The University of Iowa

Ann F. McKenna is Dean of the College of Engineering at the University of Iowa.

Dr. Brooke Charae Coley, Arizona State University, Polytechnic Campus

Dr. Brooke Coley, an Assistant Professor of Engineering at Arizona State University, is a pioneering force in disrupting the status quo of engineering to create a more equitable and inclusive field where all individuals can thrive. As the Founding Executive Director of the Center for Research Advancing Racial Equity, Justice, and Sociotechnical Innovation Centered in Engineering (RARE JUSTICE), Dr. Coley leads transformative efforts to challenge systemic barriers and promote equity in academia. Her research focuses on amplifying the lived experiences of racially minoritized scholars, dismantling anti-Blackness in STEM, graduate student education, and fostering awareness of, and ultimately, accountability for, the lived realities of individuals navigating STEM through immersive virtual reality experiences. Collaborating with mental health experts, she also is intentional to integrate a head-on focus on the implications for wellness and wholeness in academic environments. Dr. Coley's transparent and culturally responsive approaches, coupled with her dedication and fortitude, have positioned her as a recognized leader in the field. Since 2017, she has secured millions of dollars in grant funding from the National Science Foundation, employing critical qualitative and arts-based methodologies in her work. She received the Wickenden Award and Betty Vetter Award in 2024 and was named a Virtual Visiting Scholar by the ARC Network in 2023. Launching from the Ph.D. in Bioengineering from the University of Pittsburgh oriented to the challenges of navigating STEM as an underrepresented and minoritized scholar, she continues to lead change and advocate for institutional transformation and accountability through novel applications and approaches.

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Abstract

This research study is step one in exploring cultural considerations affecting advising dynamics between advisors and international Ph.D. students in engineering disciplines in the United States. The study draws from the Intercultural Competence Framework as the theoretical lens. It collects data from four international PhD students in engineering at one public institution by employing semi-structured interviews. Further, the results concentrate on the need to identify and inculcate the sensitivity of cross-cultural communication into advising interactions that cultural competency is an essential element of being an advisor. It also brings personal rapport in developing trust to provide such tailor-made advice. Such findings in this study make clear the recommendation that training in intercultural competency be designed for advisors and a balanced personal and professional relationship be adopted between the advisor and student to promote the development of more inclusive and culturally appropriate practices for advising. This opens the door for further research to find ways by which cross-cultural communication among international students can be enhanced and the students helped to adjust to such a multiplicity of academic environments.

Keywords: International Students, Engineering, Intercultural competence, Advising interactions, mentorship/mentoring.

Introduction

The United States is one of the most preferred destination countries for international students at the graduate level [1]. Currently, according to the most recent report filed by the Institute of International Education, there are over a million students from colleges and universities across the US. These international students contribute to 5% of the overall student population. [2] Engineering programs are among the most highly taken up courses by international students in the United States [3]. The literature review illustrates the cultural adaptation involved in the reversible process of advising dynamics of education while highlighting the critical roles advisors play in constructing the academic life and future of the international student [5]. This has caused a dramatic change in the composition of Ph.D. enrollments in the U.S.

The importance of cultural understanding in advising international students cannot be overstated, and several studies have highlighted this fact. For instance, Vakkai et al.'s research has shown that international students' cultural backgrounds and values cannot be ignored, and having advisors who are more attuned to these aspects can significantly impact an individual's academic success [6]. Similarly, Liu et al.'s study highlights the need for increased attention and guidance towards international students, which can lead to advisors who are more culturally competent [7]. Another research study has focused on the potential barriers posed by cultural differences in advisor-student relationships and the intercultural communication skills that advisors need to overcome these challenges [8]. Furthermore, two studies have delved into the cultural aspects of advising international engineering students, highlighting the varying levels of relationships between advisees and advisors and the need to understand how culture shapes advising practices in engineering disciplines. Overall, these studies emphasize the importance of cultural

understanding in advising international students and highlight the need for advisors to be culturally competent to help their students succeed.

This research study aims to examine how international students communicate with their advisors in engineering disciplines. The research aims to gain a comprehensive understanding of how culture affects and impacts advising practices. The ultimate goal of this research is to identify ways to improve the advising relationship's efficiency, with a specific focus on international students studying in U.S. institutions. Effective communication is critical in this relationship as it ensures clarity, confidence, and better decision-making. Therefore, the study aims to investigate the factors that facilitate effective communication between international students and their advisors. This research also aims to support the development of intercultural communication competencies for both international students and advisors. For international students, understanding and managing cultural variations within advising interactions could contribute to a much richer experience of higher education. On the other hand, a more interculturally competent advisor can better understand and support these students in meeting their unique needs as they navigate their academic experiences.

Literature Review

Several studies have identified that international students in the United States face various challenges, such as difficulty in adjusting to a new cultural setting, understanding the language, and integrating into cultural dynamics [9, 10]. These challenges become even more pronounced when advisors and their advisees who are international students have cultural mismatches and misunderstandings. This is especially true with engineering programs that largely attract students from different cultures where the aspect of hierarchy as well as authority figures in general play a critical role [11]. The U.S. promotes individualism and encourages independent thought with self-advocacy in academic culture [12]. However, one of the major challenges in advising dynamics has been a lack of cultural awareness among advisors, which can create adversities for international students.

Intercultural competence refers to the ability of a student to understand and navigate different cultures, encompassing communication effectiveness with people from diverse cultures and backgrounds [13]. Consequently, advisors with advanced intercultural competence are more sensitive and have a better understanding of the cultural context and needs of international students leading to more supportive and effective relationships with the advisee. For example, literature about relationships between research advisors and international doctoral students, and the results showed that cultural values and beliefs about advisor-student relationships were influential in shaping the dynamics of advisor-student relationships [14]. To enhance the advising experience of international students, it is recommended to provide advisors with training on intercultural competence and allocate more resources towards this aspect. Another research study also explored the mentorship experience of international graduate students in the engineering fields [15]. Their findings revealed that cultural backgrounds may have an impact on the mentor-mentee relationship and underscore the need for intercultural competence in effective mentoring to new international students.

Communication practices are known to vary across cultures. Therefore, advisors should be aware of these differences and adapt their advice accordingly [16]. One of the biggest challenges faced by international students is having a poor relationship with their supervisors. This is mainly due to differences in communication styles, with direct and indirect approaches being used by

international students, as noted in a study conducted by Cao and Meng (2020) [17]. Such differences can create confusion and miscommunication that can ultimately affect the relationship between advisors and international students. As a result, the long-term academic success of these students may be negatively impacted.

Research literature suggests that building trust between advisors and international students is crucial to providing personalized help to each student. Advisors must have a deep understanding of their students' cultural backgrounds to relate to them individually and establish rapport with them. Therefore, forming genuine relationships is essential for providing friendly and helpful support to international students as they pursue their academic goals. Arambewela et al. conducted a study on cultural adaptation and counseling for foreign engineering students, which is similar to the research conducted by Savard et al. in 2020. Both studies aimed to address the problems faced by South Asian international students studying at a large public university in the USA [18][19]. The findings revealed that cultural differences between the advisors and the students had a significant impact on the advising process [18][19]. Some cultural norms and communication styles were not easily understood by the students, resulting in misinterpretation of information. However, both studies emphasized the importance of not only a professional but also a personal bond between advisors and students, which made them feel more supported and accepted. To ensure culturally relevant advising practices for international engineering students, both studies highlighted the need for intercultural competence training for advisors. Literature has highlighted the significance of advising dynamics and the roles of intercultural competence and intra-personal relationships in enhancing the quality of experience for international students. Advisors can better integrate cultural differences and improve communication with their students by being mindful and engaging, leading to more effective advising practices and increased sensitivity towards international student culture.

Research Questions

This study aims to address the following research question:

1. What cultural considerations influence advising interactions between advisors and international students in engineering disciplines?

Theoretical Framework

The Intercultural Competence Framework shown in Figure 1 guides this study, especially in the relationship between advisors and international students seeking doctoral research in engineering in the US. Intercultural competence is the capability to operate successfully in any intercultural contact, where communicating or working with people from different cultural backgrounds is entailed [20]. The Intercultural Competence Framework (ICF) is a major theoretical guidance in negotiations of cross-cultural encounters, more so in academic advising situations [22]. The framework has the following elements [21]:

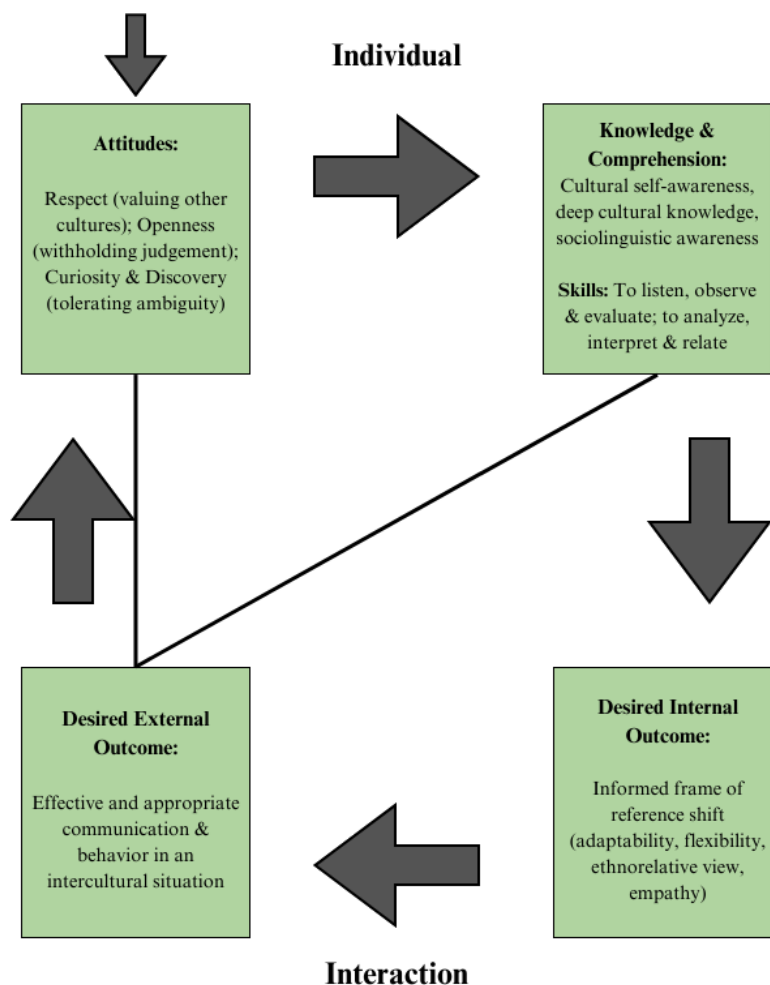
Attitudes: It entails values that are adaptable and normative orientations towards one's own and other cultures where an advisor is open to and respects other cultures through interest and acceptance of different backgrounds from that of the student.

Knowledge: They need to understand the different cultures and their communication styles. This helps them know how a student's background affects their studies.

Skills: Good communication skills with students from other cultures, adjusting communication style to the cultural communications and learning styles of the students

Awareness: Good counseling requires that there is awareness of personal cultural biases and how these can impact the interaction with students.

Abilities: They should adapt their behaviors and communications, depending on the different cultural contexts, so they can fulfill demands and expectations on behalf of the international students.



Notes:
 Begin with attitudes; Move from individual level (attitudes) to interaction level (outcomes) ·
 Degree of intercultural competence depends on acquired degree of attitudes, knowledge/comprehension, and skills

Figure 1 Intercultural Competence Framework [20]

Intercultural competence is a vital aspect of education that helps to create a learning environment that is inclusive and appreciative of students from diverse backgrounds. Advisors who possess strong intercultural competency are especially beneficial for international students, particularly those in technical fields. They can provide customized advice, help with transitions, and assist in navigating the academic environment of a foreign college [22]. Given the diverse student communities in modern higher education, it is essential to establish a structure that fosters an all-inclusive atmosphere. Advisors who possess intercultural adeptness can better understand the unique needs and expectations of international students, thereby improving the advising process [23].

The framework is designed to help academic experts navigate cultural sensitivities and establish positive relationships that contribute to the success and well-being of students. Advisors who possess intercultural competence are better equipped to manage misunderstandings or differences that may arise due to varying cultural backgrounds. This allows them to approach situations in a tactful and unbiased manner, facilitating smooth communication and understanding. These skills enable advisors to connect with people from diverse cultural perspectives, making them more inclusive and effective at creating a supportive advisory environment [24]. In other words, advisors who score higher in intercultural competence will be more helpful to international students studying engineering. Such advisors are likely to demonstrate higher levels of cultural sensitivity, making advising sessions more satisfying for students [25,19]. Furthermore, interactions with advisors possessing high intercultural competency are expected to result in higher student satisfaction with the advising process.

Intercultural competence is a multifaceted concept that consists of a combination of attitudes, knowledge, skills, awareness, and ability that are necessary to effectively understand and navigate intercultural communication challenges. Its significance is paramount in this study as it highlights the importance of being aware of and sensitive to cultural differences, as it can significantly impact the advising relationship between an international student and their advisor [20]. In previous studies, intercultural competence has been used to evaluate and enhance intercultural competency within various settings, including healthcare and global organizations [26, 27]. In the context of this study, the term "culture" refers to a shared system of beliefs, values, customs, behavior, and practices that define a group of people based on their nationality, ethnicity, religion, or social class [28]. Additionally, culture encompasses communication style, visual perception, worldview, and overall ways of thinking that are influenced by factors such as language, history, economics, politics, and more. The study describes culture as a complex construct, which is not limited to a set of static characteristics or traits. It is an evolving and dynamic phenomenon that is shaped by a multitude of factors. The definition of culture put forth in this study aligns with the concept of culture as referred to within the intercultural competence framework. Overall, intercultural competence is an essential component that can foster effective communication and promote positive interactions across cultures. Therefore, it is crucial to understand the nuances of culture and develop intercultural competence to effectively navigate intercultural communication challenges.

Methodology

The data for this study was collected as a part of a larger qualitative research study. We employed purposive sampling in this research design to account for the inclusion of international engineering students from various backgrounds and under varying circumstances. The data

comprised four international Ph.D. engineering students at one public institution in the southwest. The selection criteria included students of non-US origin, their status as student visa holders, and their educational experiences outside the US. We chose to conduct semi-structured interviews due to their flexible nature in gathering detailed information regarding the experiences and opinions of the participants. Pseudonyms have been assigned to the participants to maintain privacy and anonymity. The Institutional Review Board (Protocol [STUDY00018666]), whereby a consent form was used to explain the study's purpose and the participants' rights and privacy, approved the study. We administered a demographic survey collecting information about the nationality, gender, and year in the program followed by an audio-recorded semi-structured interview for analysis. Thematic analysis using DEDOSE was used to analyze the data to identify patterns and themes using coding, memo writing, and charting [29]. Our analysis was built from two steps: the deductive approach based on research questions and the Intercultural Competence framework, and the second involved an inductive approach to identify emerging themes [30]. This approach offered an insight into how cultural considerations affect the dynamics of advising, as illustrated through a detailed analysis of participants' experiences and perspectives.

Findings

Our study revealed three major themes across the participants: Cross-Cultural Communication Dynamics, Reinforcement and Recognition, and Personal Connection Removed from Work. This section explains each theme with example quotes from participants.

Theme 1: Cross-Cultural Communication Dynamics

Effective communication is crucial for academic success, especially for international students who are navigating unfamiliar cultural contexts in higher education. Cross-cultural communication dynamics pose both challenges and opportunities for students from diverse backgrounds. We highlight the impact of cultural differences on communication styles within the advisor-student relationship as depicted by the participants.

Alexa sheds light on the cultural nuances influencing communication as she mentioned:

"Another thing was that I realized that in Ghana, we upheld certain qualities like, you know humility and be quiet if you're not asked to speak things like that. And I realized that I had to quickly let go of some of those attributes in the US and be more vocal."

Her statement emphasizes the cultural norms that are highly valued in Ghana, where reserved communication styles are appreciated. Alexa's recognition of the necessity to adjust her communication style after arriving in the US highlights the adjustments international students have to make to fit in.

Rahul mentioned his efforts to maintain communication with an advisor and expressed self-doubt and lack of confidence in approaching his advisor. He said,

"But sometimes there was some lack of communication, maybe because I wasn't confident enough to ask him like, hey, do you want me to do this? I still feel like I'm not the worst because there was another student who was probably even worse than me, and I didn't get much mentorship probably as well because it's more independent stuff, doing independently all the stuff, figuring out everything."

Rahul's feelings of self-doubt and uncertainty highlight the difficulties encountered as an international student when seeking clarification or guidance in a new academic setting. This emphasizes the importance of fostering transparent communication channels to improve the advising experience for international students.

For international students trying to communicate with people from different cultures can often be a challenge. However, by adjusting communication styles and establishing clear channels of communication, as demonstrated by Alexa and Rahul's experiences, the advising experience can be greatly improved. Acknowledging and addressing these cultural differences is crucial in supporting the academic success of international students.

Theme 2: Reinforcement and Recognition

This theme enquires about the dynamics of feedback and acknowledgment within the academic realm. The following quotes from the students highlight valuable insights into how expectations and outcomes are intertwined, as well as how structured versus unstructured work environments can impact the productivity of a student.

Akash shares his experience of encountering sarcasm when expectations aren't met, underscoring the importance of providing constructive feedback and empathy during difficult times. He mentioned,

"Sometimes I do get a little bit of sarcastic comment from him like, 'Okay, so I've been working on some project for a while. Let us say he expects me to get results. But sometimes the experiments are not going well, there is also not coming as well as they should be."

However, bringing sarcasm in critique does not work all the time but rather has reverse effects on learners, constituting part of their lack of motivation. The participant in this scene may symbolize the contrast between fake goals, which seem impossible to reach, and real-life results when the "devil makes the work half-done". This relates to the heart of what an individual perceives themselves in when surrounded / rendered unsettled by the hindrances / impediment that might come along on this journey on the road to achieving the desired / set targets.

Another student Iqbal identified cultural nuances that existed between his homeland and the United States, which were observed in the way he adjusted to the kind of advising that was practiced. He said,

"Back home, task sort of going based on proper planning. Here, it's more unstructured and less deadline-y kind of thing. So, it's taking me longer than anticipated to do tasks, I would say probably a little more push and things like that."

This quote sheds light on the challenges that can arise in an unstructured setting, emphasizing the need for extra motivation and effort to meet expectations. The lack of clear guidelines and well-defined goals can lead to confusion and delays ultimately affecting the success of the students.

The student experiences mentioned the pivotal importance of feedback, recognition, and cultural flexibility. The instance of Akash encountering sarcasm serves as a reminder to provide constructive feedback with sensitivity, while Iqbal's experience of adapting to an unstructured environment highlights the need for increased motivation and diligence. This stresses the importance of creating academic environments that are supportive and structured, in turn promoting productivity and enabling student success.

Theme 3: Personal Connection Removed from Work

This theme explores the student's aspiration to connect with their advisor more and establish a personal relationship beyond work. The following quotes from the students expressed getting to know their advisor on a personal level to be comfortable and approachable. Iqbal expressed his desire to have more opportunities to get to know his advisor better and feel more comfortable. He said:

"I would like some more personal relationships...More opportunities to get to know him better and get to know what my interests are. Maybe go out a couple of times to eat, grab stuff that makes it more comfortable for the student to approach."

This emphasizes the fact that creating personal relationships beyond academic advising is essential. Here, such relationships can make advisors and students more comfortable with each other and develop trust, thus improving the quality of the academic advising process.

Another student, Alexa expressed similar emotions about having more in-person interactions whether it's in the form of meetings or social gatherings. She mentioned:

"I think we should probably have some more in-person meetings, maybe even like some social gatherings...More frequent social gatherings would probably be good. Increase the comfort level and things like that."

The student highlights that if the number of face-to-face meetings and social events were increased, it could bring big advantages. She referred to these functions as giving a relaxed atmosphere that could be fostered for the betterment of working relationships. The idea underneath here is that if a more relaxed and socializing environment is in place, then people will be able to exchange a lot better and work.

These results may indicate that the relationship between advisors and international students can become complex due to factors such as differences in cultural backgrounds, communication

styles, constructive feedback, and the need for personal interaction. This can hinder the creation of effective intercultural advising environments.

Discussion

These findings and literature provide evidence of the importance of advisors possessing cultural awareness and sensitivity when advising international students. Establishing personal relationships with students is crucial in developing trust and comfort in the delivery of individualized advice. Positive personal relations between advisors and international students are considered a significant factor in measuring student satisfaction and success [31]. Our participants showed a desire to get to know the advisor on a more personal level can help students feel more comfortable and improve their relationship with the advisor. This idea is supported by previous studies which have found that personal relationships can enhance communication, trust, and cooperation [32]. In a study focused on doctoral advising relationships, students identified a mentor who was responsive, empathetic, and supportive, and who took a special interest in their success [33]. Our research has found that international students may face difficulties in making friends due to cross-cultural barriers and communication issues. Some studies indicate that international students may feel isolated and struggle to adapt to their new social and academic environment [34]. Therefore, academic advisors should possess cultural sensitivity and competence to create a welcoming and supportive atmosphere for international students to build personal relationships with their advisors. It is essential to be proactive in organizing social activities that promote inclusivity and integration for international students.

Effective communication and feedback significantly contribute to the effectiveness of academic advising and help students achieve their academic goals [35]. Previous research has shown that feedback and recognition have a positive impact on student motivation, engagement, and performance [36]. In this regard, recognition plays a critical role in the success of advising, especially in STEM areas. It is necessary to ensure that academic advising is effective in promoting student retention and success, particularly for underrepresented groups [14]. It is possible that cultural differences can affect feedback and recognition. Studies suggest that cultural variations in individualistic and collectivist orientations can affect how students interpret feedback [27]. For instance, criticism may be perceived as a reference to personal weaknesses by students from collectivistic cultures, while students from individualistic cultures may view it as an opportunity to improve. Therefore, advisors should understand and appreciate these cultural differences and provide tailored feedback and recognition.

The study highlights the challenges faced by international students in effectively managing a new culture and communicating with advisors. It emphasizes the importance of cultural competence training for advisors to equip them with the necessary skills to be sensitive and tolerant of diversities among student populations. It also stresses the need for students to take a proactive role by addressing cultural differences and communicating their needs in mentorship relationships. The study advocates for empowering students and promoting intercultural competence to enhance the advisor-student relationship and ensure the success of international students' academic pursuits. To achieve this, advisors in institutions could be trained through programs to understand and support international students better. Developing personal relations and creating a culture-friendly advising climate will also foster an environment that is favorable and supportive towards international students. The study calls for a collaborative effort between

institutions and international students to promote cultural understanding and inclusivity in academic settings.

The above outcome is consistent with intercultural frameworks that highlight the reactions felt by individuals experiencing cultural dissonance in adapting to a new set of cultures. It also aligns with the Sung theory of Cultural Intelligence, which encourages individuals to engage successfully with others from different cultures [37]. Our study shows that cultural differences affect and require effective interpersonal communication to foster relationships between advisor-students.

Our findings align with existing literature that emphasizes the significance of cultural understanding and building a personal connection between advisors and international students [18, 19, 33]. This is because effective supervision of international Ph.D. students requires advisors to possess high levels of cultural competence. Similarly, Vakkai et al. have highlighted that the weak intercultural communication skills of an advisor can pose challenges due to differences in direct and indirect communication styles across cultures [6]. Studies on cultural dynamics between advisors and international engineering students suggest that cultural discrepancies can lead to miscommunications and misunderstandings, which can have negative impacts on academic programs. In conclusion, effective cross-cultural communication is critical to the role of an advisor, who must be empathetic to the socio-cultural adaptiveness of international researchers from different cultures. Our findings highlight the importance of advisors' adaptive and responsive qualities when working with international Ph.D. students, especially in cases where national cultural differences exist between the advisor and the research group.

Future Work

Further research is needed to understand the nature of existing cross-cultural communication challenges and provide more effective support for international students in adapting to divergent academic settings. Moreover, comparative studies between regions and within other subject areas will produce better insight into the influential cultural factors regarding these dynamic advising approaches. Longitudinal investigations are also critical in helping observe the academic and professional progress of students enrolled in higher education and, therefore, exploring the contributions of advising to the achievements of international students. This is part one of a greater study; hence, it requires interviewing more students and getting more insight into these issues. Subsequent research should expand this study into further and deeper directions, hoping to provide detailed descriptions that capture the spaces between reflections to make stronger recommendations to improve intercultural competency in academic advising.

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