



# Navigating Science Research: The Past and Present of Global South International Graduate Students Lived Experiences

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**Abstract:** Epistemic injustices occur when certain people or forms of knowledge are unfairly undervalued because power dynamics distort which ideas are heard and taken seriously. This phenomenological study explores the research experiences of seven international graduate students (IGS) from the Global South who are involved in science research at a Southwest university. The exploration focuses on students' past and present as they engage with dominant norms and knowledge systems in scientific research. The past corresponds to participants' prior experiences in their home country; the present includes their experiences in their host country; together, these experiences shape implications for their epistemic self and institution. This exploration was achieved through a semi-structured interview, following a phenomenological approach. I delved into students' subjective consciousness and unique judgments about what constitutes justice and injustice in their experiences. Findings indicate how participants engage in research by bridging their present and past experiences. Furthermore, findings suggest that epistemic participatory injustices experienced by participants in their prior research experiences and now in their host country call for a reflection on the effect of coloniality in doctoral programs in the US and abroad.

**Keywords:** Epistemic Injustice; Global South Higher Education; International Students; Science Education.

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## Introduction

### Purpose

This phenomenological study sought to explore epistemic injustices among the research experiences of international graduate students (IGS) involved in science research in the Southwest of the US. In the current literature, less research examines IGS experiences in scientific research processes in terms of epistemic injustice. Furthermore, most empirical studies on epistemic injustices and inequalities are conducted outside the U.S., underscoring the need for a deeper exploration of the epistemic injustices IGS can face in scientific research. However, the present study goes beyond producing knowledge due to a dearth of research on the explored topic; instead, it offers an opportunity for reflection in academia, acknowledging that researchers in this country bring experience that may hinder or foster their research experiences and that institutions need to accommodate those necessities. Those necessities regard not replicating colonial attitudes and ethics of knowing that IGS might have experienced in their home countries.

### Conceptual and Theoretical Framework

Miranda Fricker's (2007) work established an avenue for this research study. Her work centers on power and the ethics of knowing, providing a framework to identify how knowers and knowledge are unduly dismissed due to systemic prejudice from a hearer or a collective; a framework known as epistemic injustice (EP). Since IGS at U.S. universities become a minority upon arrival, they may experience epistemic injustice when engaging with dominant

norms and knowledge systems. Thus, I argue for applying the lens of epistemic injustice to examine the experiences of international graduate students from the Global South in science research. However, since Fricker's work was first published, there have been subsequent iterations aimed at studying, in a more nuanced manner, the ways in which individuals experience epistemic injustice. Hence, in the following paragraphs, I build a conceptual framework that establishes the types of epistemic injustice participants experienced, starting with Fricker's epistemic injustice.

First, and for the sake of this study, it is my duty to acknowledge that science is a human endeavor, which is rooted in social interactions (Vygotsky, 1978). And that knowers are persons "who seek to know and understand the world around them, not just those who already know or claim to know" (Grasswick, 2017, p. 314). Having said this, epistemic injustices occur when knowers or forms of knowledge are unfairly undervalued (Fricker, 2007). A type of epistemic injustice is hermeneutical injustice which occurs when "a gap in collective interpretive resources puts someone at an unfair disadvantage when it comes to making sense of their social experiences" (p. 1). Furthermore, Heidi Grasswick crafted the term participatory epistemic injustice which refers to "engagement as participants in knowledge generation and as receivers of knowledge" (Grasswick, 2017, p. 315). In this case, knowers' "capacity to contribute to cooperative inquiry as an epistemic agent is stymied" (Grasswick, 2017, p. 316). This term is particularly applicable to the present study, as it aims to explore the experiences of Global South IGS as they navigate and engage in science research.

Apart from these frameworks, Bacevic (2023) presented epistemic positioning, consisting of four types of epistemic injustice that anyone involved in knowledge production could experience—bounding, domaining, non-attribution, and appropriation. Bounding corresponds to a student's claim being devalued when peers hold a judgment that devalues it, such as adjusting a lab protocol to optimize research outcomes. In the case of domaining, this involves reducing a knowledge claim simply because it is associated with a field or school of thought that is deemed less valuable. Lastly, attribution and appropriation: the former refers to avoiding recognition of a colleague's work, while the latter involves appropriating others' claims.

Lastly, given this phenomenological study that explores students' experiences of Global South participants and how this plays a role in their current experience, I draw from Maldonado-Torres's Coloniality that refers "to long-standing patterns of power that emerged as a result of colonialism, but that define culture, labor, intersubjective relations, and knowledge production well beyond the strict limits of colonial administrations" (Maldonado-Torres, 2007, p. 243). Hence, I argue that phantom coloniality is the assimilated patterns of power that individuals possess, which continue to define culture, labor, intersubjective relations, and knowledge production, and are rooted in their past lived experiences in the Global South.

This conceptual and theoretical framework guides this study in identifying epistemic participatory injustices in science research and the types of injustices that occur. It also supports the idea that students from the Global South

might have experienced injustices rooted in colonial thinking. These injustices could have affected how they navigate and engage in science research. This is why these perspectives are threaded together.

### **Epistemic Injustice and International Students Literature Review**

Epistemic injustices are instances in which knowers and knowledge are unduly dismissed due to an imbalance of power between those who voice their ideas and their audience (Gonzales et al., 2024). In this phenomenological study, international graduate students at U.S. university may experience epistemic injustice when they engage with dominant norms and knowledge systems in scientific research.

The body of literature on international graduate students (IGS) is vast (Agrawal et al., 2021; Hung & Hyun, 2010; Hunter-Johnson, 2022; Lim et al., 2021; Rodriguez et al., 2023). This body of literature focuses on microaggressions (Rodriguez et al., 2023), language (Agrawal et al., 2021; Hung & Hyun, 2010), and gender disparities (Lim et al., 2021). The body of literature on epistemic injustice and inequalities is diverse and does not necessarily focus on the experiences of international students. For example, research focuses on academic migration among scholars (Davies, 2023; Oliveira et al., 2023), on faculty and higher education departments (Gonzales et al., 2024; Oldac et al., 2024; Skopec et al., 2021), and international students' experiences in higher education (Hayes, 2019; Hayes et al., 2024; Ploner, 2018; Lee & Mao, 2025).

Among the empirical studies that focus on both IGS and epistemic injustices, we see how epistemic injustices exist in transition experiences (Ploner, 2018), engagement in internationalization (Hayes, 2019; Lee & Mao, 2025), and utilization of epistemological resources in learning (Hayes et al., 2024; Lee & Mao, 2025). Nonetheless, research on IGS experiences in scientific research is scarce. On the experiences of international students, literature states that they come from diverse backgrounds different from those found in dominant knowledge systems (Oldac et al., 2024); this recognizes the diversity of scientific practices across different regions and strengthens the contextual understanding and significance of IGS prior experiences (Davies, 2020; Oldac et al., 2024).

Even when research has focused on the experiences of IGS, more research is needed to highlight the epistemic injustices and inequalities in their lived experiences. Structural inequalities related to gender, race, class, language, nationality, epistemology, and epistemic injustice remain significant challenges for those considered 'outsiders' in academia (Oliveira et al., 2023), such as IGS at U.S. universities (Gonzales et al., 2024). At universities that still hold a colonial curriculum perspective, where knowledge is silenced or erased, opposing viewpoints highlight the complexities of inclusivity in higher education when the curriculum does not accommodate diverse epistemic frames (Hayes et al., 2024). In these lines, the literature supports destabilizing existing structures in higher education, aligning with efforts to challenge dominant frameworks (Hayes et al., 2024) and to negotiate diverse ways of knowing (Skopec et al., 2021). Besides, Lee and Mao (2025) assert that research centers on deficit narratives that focus on international students' adjustment difficulties, and thus recommend exploring IGS' experiences, avoiding overemphasizing the lack or deficiency of IGS. In the current literature, less research examines IGS experiences in

scientific research processes in terms of epistemic injustice. Furthermore, most empirical studies on epistemic injustices and inequalities are from outside the U.S., which calls for a deeper exploration of the epistemic injustices IGS can face when engaging in scientific research. Consequently, the purpose of this study is to explore epistemic injustices among the research experiences of international graduate students involved in science research at a university in the US Southwest.

## **Methodology**

This phenomenological study (Groenewald, 2004) explores the research experiences of international graduate students (IGS) from the Global South, involved in science research at a Southwest university. The study has the following research questions: How do international graduate students (IGS) from the Global South engage in and navigate research at a US Southwest university? How do the lived experiences of IGS from the Global South mediate their participation in science research at this university? How does epistemic injustice shape the lived experiences of IGS from the Global South in science research?

In this study, I sought to understand participants' experiences. Thus, prior to the study, an interview protocol was designed to address the established research questions, following Seidman's (2019) guidelines for researchers in education and the social sciences. The interview protocol contained three types of questions: the first block inquired about background and demographic information, the second block gathered domain questions about the students' research experiences in their home country and in the US, and whether in this experience they had experienced participatory epistemic injustice, the last block consisted of supplemental questions that sought to probe more details of the instances in which participants experience epistemic injustices (see appendix A for sample questions). Once I defined the study's research design, I followed the appropriate process for submitting the research protocol to the Institutional Review Board, which reviewed and approved it.

## **Positionality**

As a queer international student and son of campesinos from the north of México, I could not help but think of my own experience as I explored the experiences of other international graduate students in science. Arriving at a US university presented a whole new enterprise of knowledge production, with its old and new hierarchies, that initially seemed overwhelming but that I gradually came to understand and made the focus of my research interests. Hence, I seek to understand others' experiences and inform the scholarly community about our struggles in coming to terms with a global experience. The intention behind these explorations is to foster reflection, transformation, and epistemic justice among peers in science research.

## **Data Collection and Explication**

I, a Mexican IGS, recruited IGS from the Global South using snowball sampling. The sample consisted of seven IGS enrolled in science graduate programs at a Southwest university, see Table 1 for self-reported demographic

information. A phenomenological approach with a semi-structured interview was deemed best for understanding participants' perspectives and lived experiences regarding the exploration of epistemic injustices among international graduate students (Merriam & Tisdell, 2016). Data collection methods included a semi-structured interview with participants. Interviews were audio-recorded, lasting 45-60 minutes, and were conducted via Zoom. During and after each interview, memoing occurred, including descriptive and reflective information about each shared experience.

**Table 1**

*Participants' Self-Reported Demographics*

<b>Pseudonym</b>	<b>Home country</b>	<b>Graduate Program</b>	<b>Time</b>
Arif Rahman (AR)	India	Chemistry (PhD)	3 yrs
Lorena Rojas Esquivel (LRE)	Chile	Chemistry (PhD)	4 yrs
Sofía Fernández Vargas (SF)	México	Chemistry (PhD)	6 mos
Citlali Reyes Miranda (CRM)	México	Geophysics (MS)	1 yr
Kofi Nyarko (KN)	Ghana	Geological Sciences (PhD)	3 yrs
Luciana Rodríguez García (LRG)	Colombia	Environmental Science (PhD)	3 yrs
Luis Alejandro Moreno (LAM)	México	Environmental Science (PhD)	3 yrs

*Note:* Time corresponds to the students' time in the host country in the US at the time of the interview.

This study followed Groenewald's (2004) phenomenological research design to explore students' subjective consciousness and unique judgments about what constitutes justice and injustice as they navigate their lived research experiences. Interviews were manually transcribed verbatim. Analytical memoing continued during and after interview transcription, where preliminary patterns were identified. Then units of meaning were delineated, explicating how participants navigate their past and present research experiences at a US university in the Southwest. Delineating units of meaning permitted the formation of themes among the interview transcripts. General and unique themes were extracted to construct a composite of the lived experiences of Global South students and how they engage in and navigate research. Trustworthiness was ensured through researcher reflexivity and the use of direct quotes to attest to participants' experiences. This study explicated the similarities and differences among the seven experiences.

To achieve this methodological endeavor, the author and sole researcher of this study initially compiled a list of units of meaning from interview transcripts. This list was scrutinized for redundancies, which were then eliminated. Such tasks included determining how many times these units of meaning appeared across transcripts to identify a pattern. For example, if a unit of meaning was delineated in a transcript and then identified later in that same transcript, it was analyzed to determine whether the same meaning was carried in that specific unit delineated. The same was done when a specific unit of meaning appeared in another transcript. This was conducted to ensure that the researcher was kept bracketed throughout the analysis process. Once a list of units was completed, I examined all units of meaning to elicit their essence, as shown in Table 2. This task continued to form clusters of themes by grouping units of meaning, which was repeated twice. One initial time to eliminate redundancies, and a second time to finalize the units of meaning once clusters had formed. In this sense, the final cycle organized clusters of themes to elicit the essence of the transcripts within the overall context and the accounts of the seven participants.

In Table 2, I describe the coding scheme used to analyze the seven interview transcripts of this study in terms of participatory epistemic injustice, with conceptual and interpretive contributions. Moreover, the analysis was not limited to the aforementioned coding scheme; however, this specific scheme is used to construct the argument for phantom coloniality.

**Table 2**

*Coding Scheme*

<b>Construct</b>	<b>Primary Theoretical Sources</b>	
Participatory Epistemic Injustice	<p><b>Epistemic domination:</b> when one-person (often in power) controls what counts as valid knowledge and what knowledge should be produced, limiting others' contributions. <b>Loss of intellectual confidence:</b> student loses their confidence on their knowledge due to an environment or culture in which students are seen as inferior, thus, their ideas are less valued, causing students to ask less questions and engage less in collaboration. <b>Epistemic ignorance:</b> unaware or unwilling to understand other epistemologies or cultural knowledge systems. <b>Epistemically Cautious:</b> careful about asserting one's perspective, often due to marginalization or previous invalidation. <b>Linguistic assimilation pressure:</b> pressure to conform to the dominant language to gain acceptance. <b>Epistemic Appropriation:</b> it combines the failure to attribute the claim to its original author (or co-author) with its attribution to someone else.</p>	Bacevic (2023), Fricker (2007), and Grasswick (2017).

In the table above, I present how participatory epistemic injustice (PEI) was identified across the interview transcripts, along with the primary theoretical sources. The reader can observe the various codes used to identify PIE; nonetheless, this author argues that participants' accounts suggest that coloniality lingers in their experiences. Hence, and in this sense, I refer to this as phantom coloniality, a sublayer consistent with remnants of colonial power dynamics that participants experienced in their home countries. Which I refer to as phantom coloniality since it stems from a Global South experience and oversteps into their present experience in their host country. Phantom coloniality can be identified as a learned perceptions in which participants devalue their knowledge due to long-standing colonial structures in the Global South, this includes, but is not limited to, hierarchical power dynamics, normalized epistemic appropriation, and valuing of Western knowledge over traditional knowledge. As a result, the explication that I present in the following sections reflects patterns of phantom coloniality among the seven participants interviewed.

## Findings and Discussion

The findings focused on four areas: the relationship between research and the individual, the agentic knower bridging research experiences, and experiences of participatory epistemic injustices. These four areas are explicated by 6 themes: *Engaging in Science Research*, *Epistemic Positioning*, *the Agentic Knower*, *Phantom Coloniality*, *Effects on the Epistemic Self*, and *Participatory Epistemic Injustice*. Hence, there is a section for each theme that, through interview quotes and references from the literature, explicates the lived experiences of international graduate students (IGS) from the Global South. At the end of this portion of the study I present a composite summary listing the main findings, from which similarities and differences can be drawn, since participants were recruited from two different departments: chemistry and earth sciences. To start the present section, Table 3 serves as a prologue to how the research questions were addressed by the aforementioned themes. This is done to aid the reader in understanding how the research questions are addressed by the findings of this study.

**Table 3**

*Research Question and Theme Mapping*

Research Question	Corresponding Theme(s)
<b>RQ1:</b> How do IGS from the Global South engage in and navigate science research at a US Southwest university?	Engaging in Science Research and the Individual; Epistemic Positioning
<b>RQ2:</b> How do lived experiences of IGS from the Global South mediate their participation in science research at this university?	Agentic Knower; Phantom Coloniality; Effects on Epistemic Self
<b>RQ3:</b> How does epistemic injustice shape the lived experiences of IGS from the Global South in science research?	Participatory Epistemic Injustice; Phantom Coloniality; Effects on the Epistemic Self

### Engagement and Navigation in Science Research

The present section addresses the first research question of this study: how seven IGS engage in and navigate science research at a US Southwest university. Hence, this section presents two themes that emerged from the analysis of the seven interview transcripts: *Engaging in Science Research and the Individual*, and *Epistemic Positioning*. These themes show the accounts of the seven IGS as they positioned themselves within their university and navigated the material and social practices of scientific research at a US Southwest university.

#### *Engaging in Science Research and the Individual*

When IGS engages in research, they bring their individuality, which, according to their experience, is described as determined, inquisitive, conscientious, resilient, resourceful, and capable of problem-solving. The individual impacts

how participants engage in research: as an inquisitive researcher like Sofia and Arif, conducting experiments responsibly like Lorena; and collaborating with others to achieve their research goals like Arif and Luis.

As they engage in research, the individual, who is seasoned by their previous experience, helps them navigate their new experience. Arif describes how his lived experience supports him in navigating research at his host university in the US which is very much different to his home country's experience, "Working in the lab, which is quite different here. So, it's more independent, I have never driven independent project..." (AR, Pos. 74). Even though Arif never engaged in independent research, he has developed the skills to conduct it in the US. He stated, back in his home country, that he was "...motivated to see students who [were] working there as a PhD student, and...joined them as a summer intern, to understand how research works..." (AR, Pos. 23). Likewise, Kobi from earth sciences shared that now in the US, he is allowed more freedom, "to...brainstorm, to come up with ideas, or find out how other theories can fit into your work and help you work efficiently" (KN, Pos. 131-132). Both students' seasoned selves, through their prior experiences, navigate research freedom in their host country by using their lived experiences as a scaffold.

Participants in this study draw on their past to navigate their new research experiences. However, at the center is the newness of their new environment and their epistemic identity. Participants, whom I will refer to as knowers, navigate the new and similar academic structures and hierarchies, drawing on their cultural experiences, often unbeknownst to them. In the next section, I will delve into how knowers' lack of resources in their home country made them agentic individuals. Consequently, their present experience provides the necessary resources to conduct their research, and they now have the freedom to pursue their own research ideas. This freedom can sometimes be overwhelming and hard to navigate. Moreover, I argue that knowers' experiences are still impregnated with remnants of colonialism, which I refer to as phantom coloniality, drawing from Maldonado-Torres (2007). This section is the anteroom, where knowers first encounter their present context before drawing on their past to reach the essence of their experiences.

### ***Epistemic Positioning***

In this section I draw from Bacevic's (2023) epistemic positioning, particularly from appropriation and attribution injustices. Participants were asked about whether they experience appropriation in their host and home countries, their experiences were mixed. Arif shares about his fear of epistemic appropriation since it is something that he has seen around him in his home country and in the host country, this was his reply, "both ways, I would say. But I try to refrain from explaining more about that..." (AR, Pos. 154), showing fear to discuss the matter. Similarly, Citlali experienced epistemic appropriation and attribution, in her experience Citlali states "I wasn't an author, because I wasn't... like, writing, but... I've seen sometimes people giving credit for that, the... person who creates these... figures. I don't think I... I got that credit" (CRM, Pos. 109). This is a case of epistemic positioning, here the student did not fully understand that doing the analysis for a figure provided her with authorship in her experience. I followed up her response by asking if she conducted any of the analysis required for those figures, and her answer was yes. Citlali used her intellectual understanding on the topic to conduct the analysis of data and then create figures. She mentioned that she has read papers in which others were at least part of the acknowledgements sections for designing figures,

she was at least expecting that. However, she should have obtained authorship or at least some sort of acknowledgement. This not so simple instance stymied the students' understating of authorship and what of her work was meant to be recognized.

Unfortunately, Luis shared that epistemic appropriation is an everyday thing and part of academic life. Here, the student normalizes epistemic appropriation, as it is a recurring event in both knowers' home and host countries. However, Citlali's case occurred in her home country, and as a female researcher she was at a disadvantage. With this I mean that some male students have a different take on appropriation. Male experiences of appropriation in research vary. Kobi and Luis from the earth science department shared that no one could ever fully steal their intellectual property. Kobi said,

I've not had that experience here. But one thing that I believe is that if you are the originator of an idea, and... someone can pick it and try to steal it, but... You don't have that original kind of thinking... And your results will be far better than whoever tries to steal it (KN, Pos. 153-154).

Kobi, as well as Luis, has a similar perception of others appropriating their ideas; they feel a strong sense of ownership over those ideas and believe only they can fully realize them. Below, Luis shares his experience with the appropriation of ideas and how he copes with this.

Particularly...I like to share with the people my ideas... because everyone can contribute to my idea and improve my idea, but I know somebody grabbed this idea. It's part of the life, because the ideas...don't have a patent about that...move forward, because it doesn't matter if somebody stole your idea, because they... maybe they don't get the techniques (LAM, Pos. 124).

However, the fact that epistemic appropriation is a recurrent experience among IGS has created a sense of fear, as Arif shared. While Luis and Kobi take the risk of sharing their idea, they have learned to take selective risks to expand their ideas and perspectives. Whereas Arif, from Chemistry, trusts those around him less, he considers that "working in science is also... keeping some secrets with you... You cannot share everything...with your colleagues, because you don't know... their intentions (AR, Pos. 148).

IGS' experiences in their home and host counties are complex, marked by fears of epistemic appropriation and linguistic assimilation. Students face colonial perspectives both at home and abroad, which highlight the dynamics of coloniality (Maldonado-Torres, 2007) which lead to epistemic injustices. These persistent participatory epistemic injustices undermine knowers' intellectual confidence and foster epistemic caution (Fricker, 2007). Knowers illustrated how others in power-controlled knowledge production, limiting their contributions.

Knowers' lived experiences set the tone for their future. Hence, knowers come to believe their knowledge is less valued due to recurring dismissal and continuous erasure in collaborative research settings, resulting from internalized participatory epistemic injustice. In the next section, I draw from knowers' lived experiences to explicate how the effects of participatory epistemic injustices affect their epistemic selves. Coupled with this, I also explicate how knowers' phantom coloniality remains at play in their experiences, using units of meaning from their interview transcripts to create a composite of their lived experiences.

### **Lived Experiences Mediating Participation**

This section addresses research question two, which concerns how participants in this study mediated their participation in science research using their lived experiences. Each subsection below represents a theme that emerged from the analysis, *The Agentic Knower*, *Phantom Coloniality*, and *The Effects on the Epistemic Self*. In the case of *The Agentic Knower*, it illuminates how participants' sense of themselves as capable, knowledge-producing agents both shaped and were shaped by their participation in science research. *Phantom Coloniality* captures the contextually embedded, structurally colonial logic that participants experienced as shaping both their daily lived experiences and the epistemic condition of their research participation. Lastly, the *Effects on the Epistemic Self* represents the cumulative impact of epistemic injustice and phantom coloniality on participants' identities as knowers, researchers, and intellectual agents.

#### ***The Agentic Knower Bridging Research Experiences***

Agency among knowers indicates how they navigate, negotiate, and resist in the host country's established norms. Particularly, epistemic agency was developed in the context of their home country; now, they bridge the new and the old to navigate research in the US. Below, Sofia tells us how she used her prior experience to challenge the norm in her lab.

When I was doing my synthesis ... I was reading the papers, and [I] was, this is not working. And I'm thinking ... my experience tells me that this shouldn't be the temperature... I should trust in my experience or in these papers, so I was, okay, I should trust in my experience (SFV, Pos. 274).

Sofia challenged established norms and trusted her intuition, recalling how limited resources at her home institution made her more resourceful and adept at problem-solving. Similarly, Lorena explains how she practiced frugality in her lab even when she was told not to, "we have money, don't worry about that that... no, let's cut it, you cut it in half then you get more (LRE, Pos. 193). Likewise, Arif shares how he optimizes in his lab, and he considers optimization a trait learned in his home country, "I do a lot of optimization in my experiment that is more like, what I have learned from my cultural experience" (AR, Pos. 180). Knowers draw on strategies and techniques from their home countries, showcasing situated resilience and agency in the face of challenges. Their prior experiences inform their understanding and can enhance research efforts in their host country.

Luis created a support network to navigate his present experience rooted in his past experience, “My lab in Mexico create[d] a family. And all the students involved in the projects” (LAM, Pos. 22). Meaning that he had found a safety net that could help him navigate challenges in his past experience. Since this worked for him, he created what he calls ‘la familia’ in his present experience at his host university. Kobi also found his ‘familia’, which works as a support network of other international students who support each other in research and advance studies. Here, as Luis did, Kobi tried to do what worked for him in his home country, now in the US. Small events like these help knowers navigate their present experience, and as they do so, they resist and ensure that their prior experiences have an impact in their host country. Interestingly enough, knowers are unaware of this, or at least they disregard the impact their past experience has on their current experience.

Furthermore, this theme among the knowers who participated in this study consisted of situated resilience, epistemic resistance. In terms of situated resilience, knowers use their past experiences as an asset in their present experience, in most cases unbeknownst to them. The agentic student considers instances in which the knower takes ownership and exerts agency in shaping their own educational path, even within limiting systems. Epistemic resistance shows how students resisted and challenged the established norms to bridge their past and present experiences. The agentic student became a recurring code linked to the situated resilience they gained; the lack of resources in their home countries pushed knowers to take on more challenges to gain more exposure and leverage their experience in the US. In the next section, I delve into how knowers experience participatory epistemic injustice (Grasswick, 2017) in their past and how this shapes their present navigation.

### ***On Phantom Coloniality***

Knowers experienced remnants of colonialism in their home countries, as evidenced by their lack of freedom to engage as inquirers; instead, they were taught to follow instructions; it is only here in the US that they begin to develop their own research projects. Below, Kobi and others share how their rigid experience did not allow them any freedom (see Table 4). This resulted in what this study defines as internal phantom coloniality, a conception held by knowers, learned from past and present experiences, that “defines culture, labor, intersubjective relations, and knowledge production well beyond the strict limits of colonial administrations” (Maldonado-Torres, 2007, p. 243).

**Table 4***Construction of a Theme: Epistemic Domination a Type of Epistemic Positioning*

<b>Knower</b>	<b>Example Quotes</b>	<b>Emergent Codes</b>
Lorena	“Maybe we should try this different bond... maybe we can change this molecule...And my old boss... he will always say... this is what I have, if you don't like it, you can just leave” (LRE, Pos. 125).	Participatory silence Denial of Intellectual Freedom Power Asymmetry Closure of Scientific Dialogue Exit as the Only Form of Agency
Citlali	“You have no freedom at all to do... that you wanted to do. Because they were not interested in all that, or they didn't find it... useful...They were always saying that there's no funds... but in general, they were not... interested on that... even if they had the funds, I don't think that they would given me anything to do that” (CRM, Pos. 86-88).	Denial of Intellectual Freedom Disinterest as an Epistemic Judgment Discursive Shield Participatory Silence Closure of Scientific Dialogue
Kobi	“You... take a lot of instruction from your... your superior... Some of them will be very forceful, like in Ghana. They'll tell you, do this, and... You don't have to make any suggestions and say in it...” (KN, Pos. 127-129).	Power Asymmetry Epistemic Subordination Participatory Silence Closure of Scientific Dialogue
Arif	“Yeah, I think that happened to me for, for many times... So, everyone wants to get trained, and work according to how the other people who trained you wants to work with you. So that happened to me for, for...that someone trained me on something. And if I did something differently, they didn't like it. (AR, Pos. 100)	Epistemic Subordination Power Asymmetry Denial of Intellectual Freedom Epistemic Subordination Participatory Silence

A common thread among knowers is that they were used to get directions and instructions, and to deliver, meaning they had less freedom or a lesser voice as inquirers. In Table 4, I show how epistemic positioning, specifically epistemic domination, when someone, often in power, controls what counts as valid knowledge and what knowledge should be produced, limiting others' contributions, as experienced by knowers in this study in their home countries. The emergent codes indicate that epistemic domination perpetuated PEI, which influenced knowers' loss of

intellectual confidence, resulting in internalized participatory epistemic injustice and internalized phantom coloniality.

Participants were reduced to less than knowers, in cooperative inquiry they were not allowed to participate, they were stripped of their intellectual freedom, closing the scientific dialogue among mentors and mentees. Due to power asymmetry, they were considered less than knowers because they lived under a rigid hierarchy that established who had a say in the scientific dialogue. Knowers were only required to participate unless it was through subordination and if knowers wanted epistemic agency they had to exit as this was their only resource for them to engage as inquirers. Unfortunately, there is a pattern among these experiences from the Global South: learned epistemic marginalization and the denial of intellectual freedom, which come with constraints on epistemic agency. These experiences correspond to the knowers' past. Sofia shared the following,

I'm assuming... I don't have a lot of time here. I'm assuming it's also something cultural. That in Mexico, we were raised that is that at certain point is good. Like, respect your professors. Like knowing the hierarchy. And sometimes we do respect a lot. Sometimes we do respect a lot of our professors, even they are wrong. And then we need to follow the rules, even the rules are... taking a lot of time or they are doing it in the wrong way, we need to respect them (SFV, Pos. 123).

In her experience, Sofia comes full circle to remind us that her lived experience has been part of her education and upbringing; this is a product of recurring epistemic injustices that are embedded in her collective imaginary as a Global South knower. Furthermore, one can see how internalized phantom coloniality still lingers in her inquirer and knower practices. However, not everything is dark and gloomy. In previous sections, one has seen how knowers, despite the adversities they face, use their experiences to catapult themselves into the future. If that is not the case, it is the researchers, mentors, and institutions' responsibility to empower them and help them recognize the value they bring to science research.

Moreover, generalized participatory epistemic injustice is commonly experienced in IGS's home countries. Coloniality shaped IGS's home country experience and influenced their research engagement. Lorena noted that limited resources hindered the exploration of diverse ideas and that there was a lack of sensitivity to student contributions. Despite improved horizontal mentorship in the host country, students' experiences continue to shape their self-perceptions and research navigation. Sofia shared her ongoing struggles with phantom coloniality in her host country, "And I was [...] when are you going to yell at me [...] I was, I'm so stupid because I couldn't pronounce a word. And they were like, what happened to you? It's also my second language (SFV, Pos. 146). In the next section, I delve into Bacevic's epistemic positioning. Through this, I bridge the past in the present in terms of epistemic appropriation and attribution in the lived experiences of Global South knowers.

### *The Effects of Participatory Epistemic Injustices on the Epistemic Self*

The effects of recurring participatory epistemic injustices (PEI) coupled with phantom coloniality demonstrate how students lose intellectual confidence, affecting their epistemic selves. To explicate this phenomenon, I gathered units of meaning from knowers' interview transcripts that show how they were hesitant to question authority. This explication is mostly based on the knower's past experiences; nonetheless, there are still instances in which students face epistemic participatory injustice in their current experience. The effects of PEI are observed when I ask students if they challenged or made suggestions to their superiors. As mentioned before, external and internal phantom coloniality shape how students navigate and engage in research in their current experience. Hence, knowers' mixed feelings about challenging their superiors are stymied by phantom coloniality and recurring PEI in their past experiences. Below, Citlali tells us about a discomfort stemming from a perceived deficit in qualifications and experience, which, for her, undermines her sense of authority. As elucidated before, knowers have experience coloniality and PEI; thus, it is not surprising that when it comes to challenging authorities or even making a suggestion for improvement, they would feel uncomfortable. This is a polaroid of what they experience in academia: knowers have been subject to expressing their ideas based on experience and credentials from the past. Below, Citlali is responding to whether she would challenge her advisors or mentors in her present experience. Clearly, she silences herself, preventing herself from sharing her perspectives. Citlali refers to professors asking students to question what they say; however, they rarely feel comfortable enough to do so.

I don't think... that I'm comfortable... Maybe because I don't have the... the degree. I don't see myself, like, telling one of my professors that is... a PhD, or has... maybe two PhDs... And have, like, 30 years of experience... why would I be telling them, like, you can improve this? So, I don't feel with, like, the authority or... the experience to do that (CRM, Pos. 133).

In Citlali's experience, she perceived power asymmetry and a structured academic hierarchy, which function as barriers to this knower. The recurring PEI instilled loss of intellectual confidence, especially in the case of Citlali and Sofia, for whom challenging their mentors or superiors carries a moral weight. Similarly, Kobi seems to perceive questioning his supervisor more as a critique rather than a collaborative act. He explains, "I don't think it's a challenge, because I am coming from a background where it's like you're just taking a lot of instructions, and...doing a little... input by yourself, but this place... It goes hand-in-hand" (KN, Pos. 130-133). Here, Kobi understands that he is not challenging his mentors because he is speaking from his current experience, in which he found that making suggestions to his mentor is not perceived as a challenge, unlike in the past.

Citlali is a first-year master's student. She recognizes that she still needs experience to challenge authority in her department. However, I argue that this is related to phantom coloniality stemming from her previous experiences, given that she experienced constant PEI in her prior positions, which led her to her present perception as a knower (see Table 4). Linked to this is Sofia's experience as a first-year PhD student. She arrived in the US at the time of the interview and had a similar experience to Citlali's (see previous sections). Interestingly, both are from Mexico and

from different science fields; Sofia is from chemistry, and Citlali is from the geosciences, yet their experiences are similar.

There are differences in how these knowers experience challenging their superiors. Let's keep in mind that even when women have made gains in representation, significant differences in science continue to reinforce gender bias (Charlesworth & Banaji, 2019; Ranganathan et al., 2021). Thus, the lived experiences among male and female knowers from the Global South are different. In this study, I observed that female participants' accounts reflect a heightened intensity of PEI experiences, a pattern not as prominently expressed in male participants' accounts. To keep explicating this phenomenon, I now draw from Luciana's lived experience in the US, where, unlike most of the knowers in this study, she experienced PEI in the host country.

Luciana's present experience began in a hostile research environment, indicating that coloniality is present in both home and host countries. In this case, Luciana states how she was afraid of that space "...I was always afraid of the meetings... Before every meeting, I have to go to the bathroom... I was super nervous" (LRG, Pos. 140). While there are differences of context, Luciana, Sofia, and Citlali are women trying to collaborate as inquirers and knowers in academia who experienced anxiety and emotional uneasiness in the process. Hänel (2020) argues that women in academia often suffer from cumulative diminished self-recognition rooted in hermeneutical injustices, leading to a distortion of who they are in academia. Which means that female knowers in this case lack the resources to understand that what they experience is wrong and is a case of epistemic injustice. This leads female knowers to feel inauthentic and reduced to less than a knower, as told by the dominant group.

From the perspective of Fricker's (2007) hermeneutical injustice, I draw the following. Not understanding the value of the other's knowledge or experiences, in the case of the knowers' host institution, can be an advantage to the dominant system. Hence, knowers do not understand the value their experiences hold and continue to engage in the dominant system. It is worth noting that when asking knowers in this study to recall instances in which they used their prior experience, they found it difficult to recognize that their past experience had value in their present experience. The knower, however, lacking the resources to understand their experience, resists their present experience, as knowers do in this study; they might just replicate their previous experiences without understanding the value these experiences might have in their present inquiry practices; and mistreatment can go unnoticed by knowers. Here, Fricker (2007) asserts that mistreatment occurs because knowledge is reduced, as I argued it occurs and has occurred to knowers as explicated in this study. More likely, knowers' experience is reduced to something meaningless, indicating that knowers' experiences have no value, making the individual less than a knower, less than a human.

Hence, this study opted to refer to participants as knowers, given that they have been reduced to less than a knower as shown by their lived experiences. Therefore, this study is a reminder that the status of a knower is threatened in scientific research; knowers become objects rather than subjects who carry history, culture, emotion, and joy. Then

one could argue that the remedy to avoid participatory epistemic injustices is to acknowledge the value of experience, respecting knowers' knowledge; this is where the future experience of knowers begins.

### **Experiences of Participatory Epistemic Injustice**

This last section addresses the third and final research question, which considers how participants' lived experiences are shaped by epistemic injustice. As a result of the analysis, the theme *Participatory Epistemic Injustice* emerged, documenting the ways in which epistemic injustice, specifically participatory epistemic injustice, structures participants' lived experiences within the science research contexts. Moreover, for practical reasons, this section addresses only this theme; however, this research question is also addressed by the themes of *Epistemic Positioning*, *Effects on the Epistemic Self*, and *Phantom Coloniality*. As seen in Table 3 Research Questions and Theme Mapping, *Phantom Coloniality* and *Effects on the Epistemic Self* appear under two research questions (RQ1 and RQ2). In this case, *Phantom Coloniality* also constitutes a central response to research question three, to the extent as the colonial epistemic structures participants described are themselves a form of institutionalized epistemic injustice.

Participatory epistemic injustices hinder one's capacity as an inquirer to contribute to cooperative inquiry (Grasswick, 2017). Drawing on the work of Heidi Grasswick on participatory epistemic injustice, I strive to make sense of knowers' experiences by exploring the barriers and challenges they face in science research, in their past and their present. In a later section, I construct an image of the effects of participatory epistemic injustices on the epistemic self.

Knowers experienced participatory epistemic injustice (PEI) in both their prior and current experiences. Lorena experienced linguistic assimilation in her host country since when her PI is in the lab, "she wants everybody to always speak in English... and she starts complaining when we start speaking in Spanish" (LRE, Pos. 211). Limiting the student to one language may prevent them from benefiting from translanguaging discursive functions, such as participation, idea elaboration, and questioning. Hence, translanguaging is crucial when actively voicing ideas in a research laboratory, elaborating new ideas, and raising new questions, since it provides the opportunity to enter another's history of interaction and cultural practices (García & Leiva, 2014). This is a case of PEI, since Lorena, a knower and inquirer, participates in the scientific enterprise in a research lab setting. The fact that Lorena is prohibited from using her mother tongue, even when her superior may think she is supporting her in mastering a second language, means that the knower and inquirer are prohibited from drawing on language resources. In terms of PEI, Lorena was hindered from using her full capacity as an inquirer to contribute to cooperative inquiry in a biochemistry research lab by being prohibited from using her language as a resource. This is an example of external phantom coloniality, since the external individual is the object of epistemic injustice, grounded in colonial structures still present in knowledge production.

These remnants of colonial structures are still present in knower's present and past experiences. In the case of Luciana, she had a difficult experience with an advisor who "...looked at the students like we were machines, not humans..."

comparing between us...saying [student] is my metric for you” (LRG, Pos. 79). Luciana’s advisor dehumanized her, and her peer was transformed into a living standard in her research lab. Besides, her advisor created a comparative pedagogy and production of competition. Furthermore, Luciana’s environment may have hindered knowers’ recognition of subjectivity, leading to burnout, disengagement, or the exit of knowers from that type of environment, as was the case with this knower. Luciana felt alone because her previous advisor wasn’t open to guidance. She was belittled in front of her classmates because of her English proficiency. As the experience of other Global South knowers’ home countries with fewer resources showed, there was competition among her peers. Her experience sheds light on phantom coloniality and its continued presence among faculty, in the US. In the following section, I dissect the concept of phantom coloniality, which I argue exists in knowers’ collective imaginary and those who work in academia.

Altogether, the six themes outlined above provided a nuanced response to this study’s research questions. Research question one was answered through the themes of *Engaging in Science Research and the Individual*, and *Epistemic Positioning*, which together describe how IGS, the seven participants in this study, entered the science research context and developed active navigational strategies responding to their context, which in this case was either their home country in the Global South or their host country, a university in the US Southwest. Research question two is addressed by the themes of the *Agentic Knower*, *Phantom Coloniality*, and the *Effects on the Epistemic Self*; together, these themes illuminate how participants’ lived experiences of ambient colonial structures and epistemic marginalization mediated their capacity for, and sense of belonging in, participation in science research. The third research question is most precisely answered by *Participatory Epistemic Injustice*, coupled alongside *Phantom Coloniality* and *Effects on the Epistemic Self*, which are consistent with epistemic injustice functioning not only through discrete interactional moments but also as a structuring condition of these seven IGS, drawing on the Global South’s epistemic identities and research experiences. The overlapping presence of *Phantom Coloniality* and *Effects on the Epistemic Self* across research questions RQ1 and RQ2 reflects the phenomenological inseparability of epistemic experiences, meaning that the seven Global South graduate students’ lived experiences cannot be isolated from their lived identity and institutional navigation in science research contexts.

In the next section, an exercise like the one presented above is embodied. However, this composite summary of the is consistent with the research study's phenomenological approach. Unlike the summary above, which mapped how the themes that emerged from the analysis addressed each research question, the composite summary shines light on themes common to most or all of the seven interview transcripts, avoiding the clustering of common themes when significant experiences exist.

### **A Composite Summary of Findings**

This phenomenological study explored the lived experiences of Global South international graduate students as they navigate and engage in research at a US university. In the previous sections, I detailed these experiences in terms of their past and present experiences. Moreover, I identified similarities and differences among participants coming

from two different science departments. As explained earlier, similarities break disciplinary boundaries. In Table 5, I outlined the general units of meaning that show how knowers experience participatory epistemic injustice (PEI) from which one can draw similarities and differences.

The composite summary shows that PEI does not respect context or gender; however, in this small study, female knowers were at a disadvantage. IGS from the Global South possess epistemic agency, which makes them knowers; being a person makes us knowers; hence, we deserve recognition and respect. The replication of coloniality in the US can contribute to more epistemic injustices, given IGS's lived experiences. This is seen by host institutions, despite their diverse student populations, as a structure that perpetuates global hierarchies of knowledge rooted in coloniality, which fundamentally subordinates non-Western knowledges and knowers (Bacevic, 2023; Harvey & Russell-Mundine, 2019; Hayes et al., 2024; Gonzalez et al., 2024). The continuum of colonial dynamics can worsen IGS' self-othering as an internalization of the stereotypes imposed upon them (Lee & Mao, 2025). Similarly, Xu (2025) argues that repeated imposition of these colonial norms and epistemic injustices leads to the internalization of inferiority, effectively replicating the negative self-perceptions instilled by global colonial discourse. This structure creates conditions that subject IGS to the very same devaluation and silencing of their non-Western knowledge resources that they may have experienced in a globally subordinate position in their home country (Hayes, 2019; Hayes et al., 2024).

This composite, which summarizes the study's explications, resonates with internalized phantom coloniality. This author argues that all knowers experience phantom coloniality due to colonial structures still present in Global South societies that dictate power dynamics in scientific research. This phantom coloniality is evident when students lack an understanding of the power of cultural knowledge, as was the case for all participants. When they were asked to share how their home country's experience had helped them navigate research in their host country, it was a struggle for them to acknowledge that the frugality, resourcefulness, and optimization had instilled in them epistemic resilience that, in their present experience, helps them to succeed. For example, this study argues that participants (Citlali) experienced epistemic appropriation or knew about it (Kobi, Luis, and Arif). Citlali and Sofia experienced a loss of intellectual confidence because they were accustomed to not questioning their superiors. In this study, I argued that other forms of epistemic injustice, coupled with colonial attitudes, led to PEI, which then transformed phantom coloniality in participants' host country. This is to say that coloniality and epistemic injustice played a negative role, causing recurring PEI in the experiences of the seven participants in this study. The composite served as an organized list of patterns identified among the seven lived experiences of students from the Global South; these align with coloniality and epistemic injustices, which I claim can transform into what I refer to as phantom coloniality in their host country, thereby obstructing research participation.

**Table 5***Composite Summary*

<b>Experiences</b>	<b>Knower</b>	<b>Characteristics</b>	<b>Example Quotes</b>
Loss of Intellectual Confidence Caused by PEI	Citlali Sofia	Both Mexican female IGS in their first year of their respective graduate program.	“I really felt I didn't deserve this opportunity, or, like, I wasn't smart enough to be here” (SFV, Pos. 142).
Epistemic Resilience Rooted in Global South Experiences	All knowers	Have experience instances in which they have use their prior experiences in their experiences at host country. Though it was difficult for them to realize it.	“...it was something that took me, like, a semester to get... I was like, no, I'm sorry, please, one more time, and then I managed...” (LRE, Pos. 151).
Coping with Epistemic Positioning	Luis Kobi	Both males and Earth science IGS and past their third year in their graduate program.	“And about the stole... Uh, this... the stole things? Yeah, occur, every day” (LAM, Pos. 124). “...if you are the originator of an idea... your results will be far better than whoever tries to steal it” (KN, Pos. 154).
Refer to Experiencing PEI in Home and Host Countries.	Luciana Lorena	Female knowers from different science departments.	Luciana experience being ridiculed and constantly not taken seriously as a knower. Lorena's linguistic assimilation instance

*Note:* Similarities and differences are based on the analysis of the interview transcripts. Other sample quotes were presented by this author.

### **Conclusions and Implications for Future Research**

Findings establish a link between IGS's lived experiences, past and present, and their engagement and navigation of research in their host country. Moreover, epistemic injustice (Fricker, 2007), and epistemic positioning (Bacevic, 2023) helped illustrate how students' knowledge remains threatened in the host country under epistemic participatory injustice (Grasswick, 2017). Moreover, coloniality (Maldonado-Torres, 2007) plays a role in how students learned to devalue their home country's experiences, this means that students might navigate or negotiate their ways of knowing rooted in colonial perspectives: devaluing cultural ways of knowing, devaluing their own prior experience in a 'developing' country, and understanding that our experiences are not inferior to those who engage in research in dominant countries. Overall, these forms of epistemic injustice, coupled with coloniality, lead to participatory epistemic injustice; epistemic positioning keeps individuals from sharing their products as knowers and inquirers. Epistemic injustice prevents knowers from acting as inquirers who may eventually participate in

knowledge production. Coloniality sets power dynamics and confers an inferior value on non-Western and non-North ways of knowing; I refer to the remaining structures among these participants as phantom coloniality. However, this interpretative qualitative study could benefit from mixed-methods research that gathers more lived experiences from different science departments, along with quantitative data, to further operationalize phantom coloniality, a concept proposed by this study.

IGS research experience in the US is marked by prior experiences that have taught them resourcefulness, problem-solving, and resilience. However, their prior context was rooted in colonial perspectives that undermined their knowledge contributions. Therefore, the institutions in the US must not replicate colonial perspectives. Universities and research laboratories in the US ought to support their researchers in adapting to changes in research culture and in balancing academic and research activities to avoid the replication of colonial dynamics. Moreover, IGS needs support in understanding the effects of coloniality on their epistemic selves to better contribute to knowledge production. Future research can focus on identifying how Global South IGS deploy their repertoires of practice in science research to further support them in helping them understand the value of their experiences. Moreover, the future experiences of IGS from the Global South can benefit from creating change affordances based on IGS's prior experiences in science research labs in order to identify the impact of those experiences in knowledge production. Doing so, science research can open to new ideas that cater to the need of inquirers and communities. For example, translanguaging can be acquired as a new perspective to understand the science research enterprise and create inclusive research environments that are open to diversity of thought.

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**Appendix A***Interview Protocol*

<p>Background questions</p> <ol style="list-style-type: none"> <li>1. Tell about me your prior academic experiences before coming to this university.</li> <li>2. How long have you been studying in the U.S. and what is your home country/region?</li> <li>3. What languages do you speak, and which do you use in academic settings?</li> <li>4. Could you tell me about your academic background and what brought you to pursue graduate studies in [program]?</li> </ol>
<p>Domain questions:</p> <ol style="list-style-type: none"> <li>1. Tell me about your research experience here at the U.S., what research projects are you currently involved?</li> <li>2. What unwritten rules or cultural knowledge have you had to learn to succeed in your program?</li> <li>3. Have you encountered barriers in pursuing research questions important to your community?</li> <li>4. How comfortable do you feel challenging dominant theories or approaches in your field?</li> <li>5. Could you describe any experiences where your contributions were attributed to others or overlooked?</li> <li>6. What strategies have you developed to incorporate your knowledge and perspectives into research projects?</li> <li>7. Can you share a time when you took the lead in shaping a research project or question? What enabled or constrained that experience?</li> <li>8. Do you feel your voice influences how research is conducted or discussed in your program? In what ways?</li> </ol>
<p>Supplemental questions:</p> <ol style="list-style-type: none"> <li>1. Can you describe instances where you felt your knowledge or expertise was questioned in ways that wouldn't happen to local students?</li> <li>2. How are research methods or knowledge from your home country/region viewed in your department?</li> <li>3. Have you experienced situations where your ideas needed validation from local students or faculty before being taken seriously?</li> <li>4. How do your mentors understand or engage with your cultural background and perspectives? In what ways did you felt supported or hindered when using your prior perspectives to lead research?</li> </ol>

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