

RESEARCH ARTICLE

The Matter in Global Higher Education: A Collaborative Autoethnography of International Students' Sociomaterial Experiences in the United States

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Abstract

In this collaborative autoethnography, we challenge predominantly human-centered approaches in international student research by foregrounding the active roles that non-human entities play in shaping our lives. Drawing on sociomaterial theory and our experiences as international graduate students across multiple U.S. contexts, we examine how everyday encounters with space, transportation infrastructure, food, climate, and digital technology shape our access, participation, wellbeing, and sense of belonging in higher education abroad. We argue that these entities constitute material conditions whose shifting assemblages with social arrangements engender inequitable realities that remain underexamined in existing scholarship. In doing so, we join ongoing efforts to move beyond deficit narratives that attribute international students' challenges to individual shortcomings rather than to the systems that produce them. Our analysis further demonstrates the analytical value of experience-focused research in international education when it attends to the mundane as a site where these often-overlooked dynamics become visible. Ultimately, this paper calls for research, policy, and practice to engage more critically with the material dimensions of international students' experiences across diverse contexts and positionalities in order to better understand and address the inequities they face.

Keywords: International students; material experiences; sociomaterial approach; collaborative autoethnography

Introduction

“Who am I, and why have I traveled so far from the life I once knew?” Sitting at my desk in a small room, I found myself thinking about home: the warmth and comfort of seeing familiar faces and being in familiar spaces, things I had always taken for granted. Here, every detail felt different, from the silence of the room to the cold air pressing against the window. As I tried to balance homework with the loneliness of my room, I kept returning to the same question: “How do I find happiness and success in this strange land?” This question echoed the By the Rivers of Babylon song that would not leave my mind.

Our days as international graduate students often unfold through entanglements with things that may appear mundane but intersect our lives in quiet, persistent ways (Mittelmeier et al., 2025). The quiet early morning and late-night bus rides to and from campus, the walks along sidewalks with bags filled with books and electronic devices, the brief exchanges or silent rides shared with others in elevators, and the minutes spent waiting on hallway benches for classes, all quietly dictate how we exist and belong. Even the classroom seating and the thermostat that sets the room temperature become part of how we learn, connect, and endure. Through these everyday negotiations, we come to inhabit higher education systems abroad in complex ways, revealing how multiple elements coalesce into configurations that shape the textures of our lives.

Our collaborative autoethnography begins with these ordinary encounters, as we examine the entities that come together to shape our daily realities as international graduate students navigating U.S. higher education. Using a sociomaterial framework, we pursue three analytic aims. First, we foreground material (non-human) entities as central to how our daily realities are produced and lived. Second, we show that these materialities do not operate in isolation but in relation with social forces in the co-production of our experiences. Third, we expose the structural inequities embedded in and reproduced through these sociomaterial configurations. Accordingly, this study is guided by two related questions: How do material elements in and around U.S. higher education, in relation with social forces, organize and mediate our experiences as international graduate students? And what inequities emerge through these relations?

Such an endeavor is necessary because, despite the expansion of research on international students' experiences alongside their growing prominence within internationalization agendas, much of this work continues to privilege social dimensions of experience (Abdullah et al., 2014; Krsmanovic, 2021). Existing studies have richly examined how international students navigate academic interactions, relationships, belonging, identity, and language, foregrounding the interpersonal dimensions of their experiences (Bond, 2022; Leong, 2015; Montgomery, 2010). However, the material dimensions of these experiences remain underexamined and, where addressed, are often treated as contextual background rather than as constitutive, even as emerging work demonstrates how interactions with spaces, objects, and infrastructures shape international student life (Deuchar & Gorur, 2023; Xu, 2024). Restricting analysis primarily to social elements narrows conceptualizations of international students' experiences, which have already been noted as vaguely defined and deficiently approached in the literature (Deuchar, 2022). By bringing material dimensions into

analytical focus and examining their relations with social forces, this study advances a more nuanced and multidimensional understanding of international students' experiences. In this sense, international students' experiences are understood as sociomaterial realities, constituted through entangled human and non-human conditions and the ways students navigate them in everyday higher education contexts.

This study is also significant in that, through a sociomaterial approach, it resists deficit narratives that continue to shape research with international students by relocating explanatory focus away from students' supposed lacks and toward the systems of infrastructures, relations, and policies through which their realities are produced (Lomer et al., 2024). In doing so, it responds to growing concerns that experience-focused research in this field has reached a point of saturation and diminished critical purchase under conditions where such work remains largely descriptive and weakly conceptualized (Mittelmeier, 2025; Mittelmeier et al., 2024). We demonstrate that experience-based accounts can generate new analytical questions and insights when grounded in relational frameworks that attend to the mundane, such as sociomateriality. Rather than presenting ordinary daily experiences as ends in themselves, our analysis shows how they are structured, constrained, and navigated within uneven sociomaterial configurations of higher education systems.

Literature Review

Social and material dimensions of international students' experiences: An overview

International students' experiences have come to occupy a central place in global higher education research. Deuchar (2022) attributes this development to the rise of qualitative studies in international education and a broader shift from conceptualizing international students as objects of the field to recognizing them as agents. Much of this scholarship is concentrated on the social dimensions or conditions of experience (Abdullah et al., 2014; Krsmanovic, 2021), often reflecting prevailing assimilative and deficit framings (Heng & Lu, 2023; Page & Chahboun, 2019). As used in this research, these social dimensions of experience refer to relational, affective, and discursive aspects of lived experience that emerge through interactions among human actors and collective formations, including institutions, norms and structures, roles and relationships, and shared values and identities (Sy et al., 2024). Material dimensions of experience, by contrast, refer to aspects of lived experience that emerge through interactions with non-human entities (both tangible and non-tangible), including spaces, objects, infrastructures, environments, and technologies (Fenwick et al., 2015).

Analyses of social experience dominate research with international students, particularly in studies of belonging, language, academics, and identity (Abdullah et al., 2014; Krsmanovic, 2021; Tavares, 2021). Much of this scholarship, adopting acculturation frameworks, centers students' relationships with host nationals, faculty, and peers to belonging in relation to their academic success, psychological well-being, and broader processes of integration (Bender et al., 2019; Glass & Westmont, 2014; Hendrickson et al., 2011; McKenzie & Baldassar, 2017; Smith & Khawaja, 2011). Language-focused research similarly foregrounds social interaction by examining how communicative engagement relates to proficiency and, in turn, to adaptation and academic outcomes (Akhtar & Kröner-Herwig,

2015; Jing et al., 2020; Wilczewski & Alon, 2023). Identity-related experiences, including racialization and stereotyping, as well as academic experiences, are likewise analyzed primarily through an interpersonal lens, with little to no attention paid to their material dimensions (Kim, 2025; King & Bailey, 2021; Rienties et al., 2013; Tavares, 2021).

Studies that foreground the material dimensions of international students' experiences remain marginal in the literature. Existing scholarship has nevertheless focused primarily on specific material entities, including food, housing, transportation, and digital technologies (Brown, 2016; Calder et al., 2016; Habib et al., 2014; Islam et al., 2022). Within this work, food has received the most sustained attention, with studies demonstrating how food practices shape cultural learning, community formation, and acculturative stress (Brown et al., 2010; He et al., 2025; Zuo et al., 2026). Although housing has also received some attention, analyses have largely emphasized the social (particularly institutional and economic) conditions surrounding housing—including discrimination, limited university support during housing searches, high housing costs, and exploitative rental practices—rather than the material properties and capacities of housing itself (Fang & van Liempt, 2021; Obeng-Odoom, 2012; Pottie-Sherman et al., 2024). The few studies that explicitly examine the material dimensions of housing experiences do so only briefly, for example by considering spatial features such as proximity to campus and privacy (Berg & Farbenblum, 2019; Calder et al., 2016). Although still a small body of work, research on transportation and digital technologies more directly foregrounds the structuring capacities of the elements themselves by examining how transportation infrastructures shape international students' access and mobility constraints (Huang, 2023; Islam et al., 2022; Monteiro et al., 2021) and how digital media shape their learning practices and transnational connections (Bacigalupe & Bräuninger, 2017; Habib et al., 2014; Park et al., 2020).

Overall, the literature on international students' experiences has generated valuable insights into their realities across social relations, discourses, and institutional contexts. Yet it remains largely inattentive to the material dimensions of these realities. Consequently, the literature is also limited in explaining how social and material elements interact to shape international students' experiences. This limitation points to the need for approaches that foreground not only materialities but also their relations with social processes in shaping students' experiences, such as those offered by sociomaterial scholarship.

Sociomateriality as theoretical framework

Sociomateriality is not a single unified theory, but a broader theoretical umbrella rooted in relational ontology (Fenwick, 2015; Gherardi, 2016). Originating in Science and Technology Studies and feminist scholarship, sociomateriality has developed into a field characterized by diverse terminologies and conceptual approaches (Bavdaz, 2018; Haider & Sundin, 2023). However, its core strands converge on a shared posthumanist commitment to “challenge the subordination of materials to the human subject” (Xu, 2024, p. 150) and to foreground relational processes of “sense-making between human presence, space, physical representations, and technology” (Lueg et al., 2022, p. 456). It thus decenters humans as the sole actors in the universe and recognizes matter—both tangibles (e.g., tools and building spaces) and non-tangibles (e.g., internet and software applications)—as having agentic force, treating them as co-constitutive actors shaping human experience (Barad, 2003, 2007; Fenwick, 2015).

Scholars working within this framework use different concepts to capture the relations between different entities in shaping the world (Fenwick, 2012). Two related yet ontologically distinct conceptual terms commonly used in sociomaterial scholarship are assemblages and entanglements (Haider & Sundin, 2023). Originating in the work of Deleuze and Guattari (1988), assemblages refer to temporary configurations of heterogeneous human and non-human elements that come together to accomplish particular activities. Although these elements form a functional whole, they retain a degree of autonomy, allowing assemblages to shift, recombine, or dissolve as practices and conditions change (Due, 2024). For example, participation in an online class can be understood as an assemblage of bodies, technologies, instructional arrangements, and temporal structures that may be reconfigured or disrupted. By contrast, from an entanglement perspective associated with Barad's agential realism (2003, 2007), participation in an online class does not arise from a pre-existing student interacting with technologies but emerges through the inseparable co-constitution of bodies, platforms, and temporal demands, which can only be analytically distinguished through an agential cut (Fenwick, 2012). While recognizing the inseparability of social and material relations (Barad, 2003, 2007), we analytically privilege assemblages in this inquiry to examine how specific configurations of elements emerge, evolve, and reorganize everyday experience.

Sociomateriality has gained prominence as an analytical perspective in practice-oriented educational research over the past decade (Fenwick and Landri, 2012). This progress has been propelled by the broader 'new material turn' in the social sciences and a growing recognition of educational practice as composed of diverse, interdependent elements operating within a web of relations (Sy et al., 2024; Xu, 2024). Scholars have applied sociomaterial lenses to learning and pedagogy by emphasizing how learning spaces (Acton, 2017; Griffiths & Dickinson, 2025), technologies (Hannon, 2013; Kumpulainen & Kajamaa, 2020), and bodies (Hopwood et al., 2016) co-constitute educational practice. In sociomaterial applications within higher education research, a common point of departure positions universities as "an entangled, mobile array of people, buildings, and objects that are drawn together, in different combinations, to produce particular results, within specific places, and at identified times" (Griffiths & Dickinson, 2025, p. 389). In other words, universities—and, by extension, broader higher education systems—are co-constituted by the inter-relationships between human and nonhuman entities whose roles cannot be disentangled or hierarchized (Fenwick & Edwards, 2016).

In international higher education, sociomaterial approaches are beginning to emerge as a critical framework for examining international students' experiences beyond human-centered and deficit narratives. This work uses sociomateriality to show how international students' realities are produced through entangled relations among people, spaces, technologies, and institutional arrangements across both organized domains and everyday student-enacted contexts (Deuchar & Gorur, 2023; Deuchar et al., 2024; Habib et al., 2014; Xu, 2024). Adjacent work attentive to mundane materialities similarly shows how banal sites of daily life become meaningful spaces of students' practices, underscoring the analytical potential of relational approaches (Mittelman et al., 2025). These studies demonstrate how international students' learning, care needs, and peer relations are contingent on shifting sociomaterial conditions, complicating explanations that solely center human relations.

Methodology

The Autoethnographic Process

As Bennett et al. (2024) note, international students — particularly those from marginalized backgrounds — are uniquely positioned to draw on and translate their lived experiences into scholarly analysis. They further assert that such endeavors keep research with international students more “grounded in reality” and enable students to “engage meaningfully, critically, and humanistically with [their own] individual subjectivities” (p. 17). It is from this position that we treat our lived experiences as epistemic assets and adopt an autoethnographic approach in the current study.

Autoethnography (AE) is an important tool for examining lived experiences within specific contexts (Chang, 2016; Ellis et al., 2011). Inquiries grounded in AE position the researchers’ personal experiences as the primary data through which a social phenomenon is examined (Chang, 2013). By positioning the researcher as both subject and object, this method acknowledges that knowledge production is rooted in the researcher’s experiences, knowledge, and commitments (Ngunjiri et al., 2010). This emphasis on the researcher’s subjectivity aligns with interpretivist and constructivist research paradigms (Mertens, 2024). At the same time, critical autoethnography has emerged as a crucial tool for research within the transformative paradigm, affording marginalized individuals such as international students a voice and a means to reflexively examine and articulate their own realities and to advocate for change (Boylorn & Orbe, 2020; Cho et al., 2023). In this study, we employed critical autoethnography collaboratively. Collaborative autoethnography (CAE) has emerged as a common approach to autoethnographic inquiry, allowing multiple researchers to co-construct accounts of their lived experiences (Chang et al., 2013). CAE inquiries are understood to produce richer and more nuanced narratives than those generated individually, due to the coalition of multiple voices (Chang, 2013; Ngunjiri et al., 2010). With two researchers, this CAE constitutes a duoethnography (Sawyer & Norris, 2013).

We adopted the concurrent mode of collaboration, in which individual activities were interwoven with collective ones (Chang et al., 2013). Our process unfolded iteratively through a combination of dialogue (held face-to-face, over the phone, and on Zoom) and individual written responses to open-ended questions, through which we shared and documented stories of our everyday routines as international students across the universities where we studied. Early rounds of collective reflection identified elements, such as food and transportation, as anchors around which our daily lives were organized. An initial literature review revealed limited scholarship on these material entities, prompting us to center them for further inquiry. Subsequent conversations and individual writing deepened this focus, leading to a meaning-making process through which we highlighted the primary material themes recurring across our accounts for one more round of dialogue and interpretation. We mobilized these recurring themes to synthesize our partial, situated accounts into a collective voice grounded in shared conditions for critical work (Valdez et al., 2022)

Positionality Statement

We approached this inquiry from overlapping social, cultural, and geographic planes, a commonality that informs our shared critical project. We identify as Black cisheterosexual men raised in Tanzania and Ghana, respectively, in distinct contexts with broadly similar

material and collectivist orientations. As international graduate students, the United States represents our first experience living abroad, and U.S. higher education has been our sole academic context outside our home countries, first at public universities in small-town Midwestern settings and currently at the same public institution in a large, diverse metropolitan area on the East Coast. These shared identities and trajectories meant that we navigated similar systems from comparable subject positions, producing a broadly aligned critical orientation toward the structures shaping our lives. This alignment informed our decision to synthesize our accounts into a collective transformative voice.

At the same time, we remained attentive to the risk that this shared orientation could produce a flattened narrative, potentially obscuring our individual subjectivities and leaving our personal assumptions insufficiently examined (Breault, 2016; Sawyer & Norris, 2013). To address this, we remained reflexive in how we brought our accounts together, attending to our distinct standpoints across different moments of engaging material systems. For instance, one of us initially entered the U.S. higher education system as a Fulbright Foreign Language Teaching Assistant before returning as a graduate student, an experience the other did not have. This author also began their studies in on-campus housing, while the other has consistently lived off campus. In addition, while one of us encountered relatively large communities of co-nationals and immigrants from his country across the places he lived, the other rarely did, resulting in uneven access to cultural capital. These differences meant that certain experiences were encountered from unique standpoints, shaping how subsequent experiences were interpreted. However, these differences, whether subtle or more pronounced, contributed to the same critical aim of mapping the inequitable sociomaterial systems we both navigate.

Our Collaborative Autoethnographic Analysis

We organize our analysis thematically around the material conditions that threaded our realities. Drawing on key vignettes to illustrate our experiences (as in Shokirova et al., 2022), we foreground five material entities: space, transportation, food, climate, and digital technology. Throughout the analysis, the labels Author A and Author B are used consistently, with each label referring to a specific author across all vignettes.

Space

Our accounts show that physical space shaped how we experienced U.S. higher education as international students through its organization within institutional arrangements and social patterns. Housing costs, stipend levels, residence requirements, academic calendars, and the distribution of student populations all structured where we lived and with whom, shaping our access to campus resources and opportunities for connection. A central dynamic that emerged was the tradeoff associated with housing location. Different housing arrangements afforded distinct opportunities while simultaneously introducing different constraints, particularly the balance between affordability, social connectedness, and access to campus. For the first author, living off campus was more affordable and fostered stronger social connections with other international graduate students, but it also entailed longer commutes and reduced access to campus:

When I first came, I lived in a two-bed apartment with my roommate, who was also from my country and in the same program. Our building was off campus but not too far from it (...) It was expensive to rent apartments on or closer to campus. Our stipends were not enough for that. This meant that we could not get to class, office, or other campus resources as easily as those living much closer or on campus. However, we maintained strong social bonds. Our building, and many of the apartment blocks around it, [was] full of other international students, mostly from African and South Asian countries. Because of that, it was easy to make friends, some of whom we regularly played and watched soccer with.

While the social opportunities described by Author A were distinctive to his living arrangement, the affordability of off-campus housing and the challenges associated with longer commutes have similarly been documented among international students (Sotomayor et al., 2022).

Author B, whose assistantship initially required an on-campus residence, experienced the other side of this tradeoff. While residence hall living provided immediate proximity to classrooms and workspaces during the semester, it also produced isolation during university closures and academic breaks, when institutional activity receded:

A stretch of severe weather swept across the state. The university was closed, and many campus services, including dining halls, shut down. Heavy snowfall was followed by extreme cold and wind chills. While local students just went home to their families, I had no such option. I remained in my residence hall, confined to a small room high above a silent and deserted campus.

In this case, proximity to campus did not translate into access or connection. When institutional life withdrew, the space became socially and materially limiting. After moving off campus, Author B experienced a shift:

Off-campus housing offered the space for social activities. My roommate and I often invited our friends and classmates over to our house, where we cooked favorite foods from our countries and listened to music from home. There were also many international students in the neighborhood, with whom we played soccer, rode shuttles together, and met at various social events. The space for social activities allowed me to meet new people, build meaningful friendships, and develop a strong sense of belonging.

These experiences highlight how different housing arrangements organize access and belonging in uneven ways. Off-campus living, despite requiring more effort to engage with campus, often enabled stronger social networks, while on-campus residence, despite its proximity, could limit connection under certain conditions.

This dynamic extended beyond housing into the spaces where we worked. Here too, spatial arrangements organized connection and isolation in ways that were structurally produced and not personally chosen. Author B described the contrast between a shared Teaching Assistants (TAs) office and his current arrangement:

We were nine TAs from different countries all working in one big office. We could talk to each other, ask for help face-to-face instead of emailing, and share the space socially and academically. Just seeing the other TAs, some of whom were African, made me feel at home and supported. Currently, my office is also my home, and even though the undergraduates live in the same building, I do not feel very much connected. I've realized that working in a shared space with others, especially people at your program level, makes a huge difference.

Author A described a similar dynamic but in the opposite direction, moving from a shared workspace to an individual office:

When I first came, the other TAs and I all worked in cubicles in one big room. We frequently saw each other, exchanged pleasantries, and had small talks that eventually led us to hang out socially at different places from time to time. In the second year, I had my own office, and all that changed. I saw them less often, and we weren't conversing and hanging out like we used to. So, proximity to others is really key.

These accounts show that what appears as a simple matter of where one lives or works is structured by institutional priorities and social distributions that organize access and connection unevenly. Proximity to campus is privileged within institutional design as a pathway to engagement, yet this same arrangement can limit social belonging under certain conditions, while off-campus living, shaped by cost and student clustering, can enable forms of connection that institutional spaces do not. In this way, space operates less as a neutral setting and more as a medium through which institutional and social forces differentially structure how participation and belonging become possible.

Transportation

In our accounts, a car-dependent transportation system functioned as a material condition embedded in institutional forces, structuring how we moved across campus and, in turn, our access to academic and social spaces, participation, and how we were perceived and evaluated by others. At the beginning of our programs, neither of us owned a car. Like many international students (Islam et al., 2022), our mobility depended on walking and public transportation systems that were uneven in reliability, accessibility, and usability. These conditions affected movement and structured when and where we could go, how easily we could get there, and what forms of participation were possible.

Access was first mediated by the difficulty of navigating unfamiliar transportation systems. Public transportation required forms of knowledge and coordination that we did not initially have, from understanding routes and schedules to using applications and signaling stops. These were not trivial gaps—they had real consequences for where we ended up and how we got home. Author B described these early difficulties:

At my first university, although public transportation was available, figuring out where to board or get off was not easy. The first time I went to an off-campus store, I forgot to press the stop button and ended up riding around town with the bus. The second time, we went to a store about an hour away from campus. Unfortunately, the bus on that route stopped running at 6 p.m., and by the time we finished shopping, it was too

late. Our phone batteries had died, so we couldn't even request an Uber. Luckily, a pastor from my church happened to be driving by. He pulled over, called my name, bought us some food, and drove us home.

Author A similarly described relying primarily on walking, with limited use of the bus due to its unreliability and the discomfort it sometimes produced:

We walked for the most part because campus was just about a 20-minute walk away, and the bus schedules were unreliable. Also, a few times we got into uncomfortable situations with some individuals on the bus that made us not want to use it as often. For instance, one time while sitting on a bus home, I hadn't turned off the iPhone feature that makes a flash when you receive a text. I received a text, and the light flashed, and a man who was standing in front of me said I had taken a photo of him and kept threatening me despite explaining to him that it was just the flash that comes with a text on iPhones.

In both cases, navigating these systems required bodily knowledge that took time to develop, and the university offered little guidance in that process. The gaps that resulted were not simply inconveniences but conditions that shaped the terms of our participation from the outset.

Furthermore, these conditions introduced physical and temporal costs that extended directly into academic life. Reliance on walking was demanding and time-consuming, producing fatigue and delays that followed us into classrooms and departmental spaces. Author A explained:

Sometimes, I dreaded going to campus for anything be it class or department events, because I knew I would have to walk. Sometimes I arrived late, and, by the time I reached the venue, I was tired and sweaty and needed time to recover. This affected my comfort, concentration, and participation in those moments. It also raised concerns about punctuality and competence. While I must admit that I can sometimes lose track of time, walking to these events made it worse. I believe some professors initially perceived me as not being a serious student until my strong participation and performance in their courses became evident.

What this account makes visible is that the physical consequences of limited transportation did not stay outside the building; they entered the classroom, shaped how Author A was read by faculty, and required him to subsequently demonstrate competence that peers who arrived by car were never asked to prove. Fatigue and lateness, produced by the mode of transportation, were absorbed into judgments about who he was as a student.

Transportation constraints also raised safety concerns that further shaped how and when we moved. Author A described feeling vulnerable when returning from evening classes:

In my first semester, I had a class that started at 4:30 p.m. and ended around 7:15 p.m. This was in the fall, so at some point it started getting dark early, and the part of campus where the class was held had no residence buildings nearby. By the time class

ended, the area was very quiet. I would end up walking alone in the dark, and most times I walked fast because I was afraid for my safety.

The institutional schedule made no provision for how students without cars would navigate campus after dark. The class simply ended at 7:15 p.m., and what happened after was a private problem.

Limited reliable transportation also shaped social participation in ways that were consistently misread by peers. Author A noted:

Initially, some of the Americans in my cohort and department thought I was antisocial because I often turned down their invitations to happy hours and hangouts, which were usually downtown. They assumed I didn't want to socialize, without considering how I would get there or make it back home at night. All of them drove and didn't face that challenge. It wasn't until one of them suggested we could carpool that I finally accepted their invitations. When we eventually hung out, they mentioned being surprised at how sociable I was and admitted they had thought I was introverted. I then explained that it was simply because I didn't drive.

Author B described a parallel dynamic, in which dependence on others for rides constrained not only attendance, but the social labor of asking:

At my second institution, my roommate and I were in the same program, and because he had a car, I often relied on him to get to program events. If he was not attending an event, I had to look for rides from other friends. Sometimes I found a ride, but other times I did not, and since my town did not have public transportation, not finding a ride meant not attending. What helped me, something I know many international students did not have, was having a wide network of friends. However, asking for a ride is never easy. It always felt like I was burdening someone. Sometimes I avoided asking altogether because I did not want to inconvenience anyone.

In both cases, absence and withdrawal were read as disinterest or antisociability, obscuring their roots in uneven access to reliable transportation. The material constraint was invisible to those who did not share it, and its social effects were absorbed into personality judgments that followed us into our academic communities.

Access shifted meaningfully once we began driving. With a car, travel became more predictable, physical strain decreased, and both academic and social participation became considerably easier to manage. Yet this was an individual resolution to a structural problem. Peers without cars continued to face the same constraints we had navigated, a reminder that the challenges we encountered were not unique to us but were produced by institutional and infrastructural conditions that unevenly distributed the costs of mobility. Consistent with Allen et al. (2024), these narratives illustrate the operation of what they describe as auto-centric universities, where car-dependent transportation systems mediate international students' opportunities for participation and the conditions under which that participation occurs.

Food

Food emerged as an active material entity through which our lives in U.S. higher education were shaped and constrained. Working in tandem with and through the institutional, spatial, and temporal arrangements surrounding it, food actively intersected with our academic participation, social relationships, and bodily wellbeing in ways that were uneven and often invisible to others. For Author B, the most immediate way food asserted itself was through the institutional structures governing access at his first university. An assistantship that included board, and what seemed—compared to those without it—a lesser stipend, meant near-total dependence on dining halls that offered little he recognized:

As part of my assistantship, I was provided food only through board, which meant I depended almost entirely on the dining halls. These dining halls did not offer the types of foods I was used to, and food was not accounted for in the total amount of the stipend I received because of the board. As a result, purchasing my own food outside the dining halls was largely unaffordable.

Even though a kitchen existed in his residence hall, it was shared and sometimes closed, making self-provisioning unreliable. At Author B's second university, and for Author A throughout his graduate school journey in the U.S., off-campus living restored some autonomy, as stipends were not reduced by dining costs and kitchen access was unrestricted. This meant that we could buy and prepare foods we preferred, particularly those we were culturally accustomed to, a preference shared by many international students (Brown et al., 2010; Henry et al., 2025).

Yet this autonomy was partial, as food continued to exert itself through the sociomaterialities of space and transportation that constrained access. Access to cultural foods required trips to ethnic markets one to two towns away, navigable only by car (Zuo et al., 2026). Without our own vehicle, both of us depended on others for rides that were not always on our terms. Author B captures how this dependency radiated outward: "Relying on friends for rides meant adjusting my schedule to match theirs, which sometimes affected my academic activities." Only later, when we both began driving at our previous universities, and subsequently moved to our current location where ethnic markets are more accessible, did these constraints ease and food provisioning become more manageable. It is worth noting that while Author B's current assistantship also requires on-campus residence, this situation has proven less disruptive because he now drives, has access to a personal kitchen, and retains more of his stipend. Hence, it was the convergence of these constraints and not on-campus living alone, that made cultural food access so precarious.

Having to adjust our schedules to those of our friends and embark on long trips to buy ingredients, sometimes at the expense of homework, meant that food provisioning became a site of temporal constraint. Nevertheless, for Author A, these food-related temporal pressures were felt most acutely in cooking itself. The preparation of culturally familiar meals could take hours, and that time directly competed with graduate school responsibilities, as shared kitchens, long cooking times, and peak academic periods converged into a recurring conflict with no clean resolution. He describes this collision:

One of the most undesirable realities shaped by food arises when I have many school responsibilities while also having to cook because there are few alternatives for what I

would like to eat. There have been times when this nearly prevented me from meeting deadlines, especially for final papers. To manage, I sometimes make quick, low-ingredient meals such as cereal, or eat the same type of food for days simply to free up time for these responsibilities. At other times, I resort to ordering food through DoorDash or UberEats, which places additional strain on my financial situation. The worst part is that, on several occasions, I have had to skip breakfast or lunch altogether. When this happens, I experience stomach grumbling that makes me uncomfortable in class or at the office.

What this account makes visible is that food's sociomaterial conditions—including limited culturally appropriate options, the time required to prepare meals, and the cost of alternatives—interact with academic demands to produce cascading effects that shape academic performance, financial strain, and embodied wellbeing.

Our interactions with the sociomaterialities of food also produced adaptive practices that were frequently misrecognized as preference, became habitual through repetition, and at times shaped how we engaged particular social spaces. Limited access to culturally familiar foods required us to navigate with what was available, yet these adaptations were consistently read by others as expressions of personal taste. Author B recounts how repeatedly selecting the same fruit in the dining hall was misinterpreted:

When we went to eat at the dining hall, I mostly picked bananas because that was what I was most used to. This made some of my colleagues think I loved bananas so much; they didn't know I picked them frequently because it was the only thing I was familiar with on the fruit menu.

Author A shared a similar experience, describing how constrained options not only shaped how his tastes were perceived but gradually became incorporated into his routine:

At my previous institution, some of my American friends thought I was a huge fan of Mexican and Chinese food. They are great foods, but what they didn't know was that I ate them often because they were the closest to the kinds of food I was used to. Over time, I have continued to consume those foods frequently, even now that I have more options.

These accounts reveal that what appeared as preference was often adaptation under constraint, with repeated exposure gradually blurring the line between choice and necessity. In some instances, material constraints also structured social engagement in less visible ways. Author B described attending African-centered campus events at his first university primarily because they offered rare access to familiar foods, even when he was not otherwise interested. Participation in such spaces was therefore less an expression of social or cultural alignment than an adaptive response to constrained food access.

Climate

Climate operated as a material condition that reorganized our mobility, comfort, legibility, and rhythms. In interaction with institutional forces, climate also shaped our

academic participation and efficiency. Coming from countries in the tropics, we carried embodied histories calibrated to warmth, humidity, and stable daylight. The climatic conditions in the U.S. encountered those histories as a site of friction, producing recurring misalignments between our bodies and the social and institutional environments we were expected to inhabit and perform in. The most immediate disruption was to mobility. Winter transformed commuting into a source of physical and logistical strain that neither of us had the embodied knowledge to navigate at first (Bimpong, 2023). Author B described how it complicated everyday mobility:

On my first experience driving in the snow, I lost visibility because my windshield was foggy. I panicked and did not know what to do (...) Forgetting that winter can be freezing here, I added water to the coolant and forgot to drain it. As a result, when winter came, my radiator froze and damaged the engine, and the car stopped working. Since there was no public transport, moving around without a car in the winter season was difficult. I often had to walk long distances in cold weather or rely on friends for rides. However, that required extra planning, time, and appropriate winter gear; without a car, it was not easy, so I often had to adapt to friends' schedules to get around.

Author A further described the embodied difficulties of commuting on foot during winter:

Walking to school during winter was the worst, especially when it snowed. I remember one January or February when we had what they said was one of the biggest snowfalls in that part of the state in years. The streets were cleared, but the sidewalks weren't, so we had to walk through several inches of snow while wearing heavy winter jackets and boots. Pulling one leg out of the snow for each step was exhausting. It wasn't a nice experience at all. At one point, I wasn't paying attention to where I stepped, so I slipped on black ice and almost fell. I also only wore beanies and didn't feel comfortable wearing a ski mask, so my nose and ears were exposed, and the cold on them was dreadful.

Climate's reorganization of the body did not end with commuting but extended into classrooms and workspaces, where it shaped presence, participation, and legibility in ways that were often invisible to others (Bimpong, 2023). For Author A, indoor heating that satisfied most students was often insufficient, producing visible bodily responses that directly constrained his academic participation:

Sometimes it starts getting cold in the fall, and when I go to class or work, the heater is either off or turned on so low that I still feel cold. You will see me visibly shivering. When it happens in class, I don't talk because the one time I tried to speak while I was feeling cold, the shivering came through in my voice. It often feels like I'm the only one who's cold. I'll be wearing a sweater or several layers while most students, especially the locals, are in T-shirts.

In this account, the classroom is not a neutral space but one calibrated to bodies with different thermal histories that register the same temperature as comfortable. Author A's

visibly layered and audibly affected body marked him as out of place in a setting that made no provision for that difference.

Importantly, winter was not the only season that asserted itself against our bodies. For Author A, summer also produced its own form of estrangement, arriving as something qualitatively different from the heat he had known:

The sun's heat felt different here (...) Even the air that blew was hot. Back home, at least you feel the breeze even when the sun is scorching. Because of this, I also don't really like walking during summer, and although I handle it better now by driving and leaving home before midday for appointments in the afternoon, I still dread going out during peak summer because the heat is worse here (...) My favorite times of the year are probably late spring, when it gets warm without the extreme heat, and maybe mid-fall. Those are the times I usually play soccer and enjoy going out because it's neither too cold nor too hot.

What this reveals is that our bodies were not simply underprepared for cold; they were calibrated to a specific relationship between heat, humidity, and air that neither extreme of America's regional climates reproduced. Comfort, in this sense, was not a fixed threshold but an embodied and geographically situated one.

Perhaps the most consequential reorganization unfolded in our temporal rhythms. Having grown up near the equator, where daylight remains stable year-round and daily routines align with consistent solar rhythms, we carried circadian patterns that the temperate climate of the United States disrupted. Significant variations in the length of days and nights restructured how we regulated sleep, energy, motivation, and focus. Author B describes this disorientation:

When I first arrived in the summer, I was surprised by how late the sun stayed out. It would still be bright at around 8 p.m. This initially disrupted my routine because I rely on darkness as a signal that it's time to wind down. As a result, I found myself going to bed much later than usual, while still needing to wake up early for my 9 a.m. classes. That adjustment period was challenging. Over time, however, I adapted and began to appreciate the longer daylight hours. I've realized that I function better in well-lit environments and tend to be more productive when there is still natural light. This preference is also shaped by where I come from, where nighttime typically signals the end of most daily activities. Moreover, while I enjoy taking evening classes during the summer and early fall, the shorter days in winter and spring present more difficulties. The early onset of darkness can feel mentally challenging.

These shifts, which enhanced fatigue, reduced motivation, and impaired concentration and efficiency, did not occur in a vacuum. They unfolded against the unchanged demands of academic life, where deadlines, teaching responsibilities, and performance expectations remained constant regardless of what the seasons were doing to our bodies. Climate, in this sense, is not merely a backdrop to our experiences but an active force that reorganizes how we move, feel, appear, and perform in institutional spaces.

Digital technology

Certain digital technologies constituted non-tangible material conditions that shaped our experiences through the norms embedded within them. Two related dynamics recurred across our accounts: a mismatch between digital communication norms and culturally grounded ways of engaging, and the assumption of prior technological familiarity built into many platforms. In both cases, technologies and the expectations surrounding them produced friction that shaped how we participated and how we were perceived.

Both of us initially encountered challenges with email communication, though these challenges took different forms. For Author B, the difficulty stemmed from a cultural mismatch. Coming from a context where face-to-face interaction is the appropriate mode for important, personal, or urgent matters, relying on email for nearly all communication felt insufficient:

I was not used to virtual meetings and really preferred meeting in person. I also didn't believe that email was an effective way to address my questions or concerns. I think that came from my background, where if you needed something, you would go and speak to someone face-to-face. So in the first few months of my program, I struggled to see email as a reliable way to communicate or engage meaningfully, which made me continue to prefer in-person interactions with my professors or advisor. Having the option to meet in-person made a big difference; it helped me feel more confident in expressing my needs and seek clarification easily.

For Author A, the challenge was not a preference for in-person interaction but unfamiliarity with certain conventions governing email in U.S. academic settings, including expected response times, appropriate tone, and levels of formality:

When I first came, replying to student emails as a TA was stressful. I would write, rewrite, and rewrite again, overthinking (...)whether my tone sounded professional enough or overly professional. I could spend almost 20 minutes responding to an email that only needed a brief reply. I realized that email here isn't as formal as it is back home. I didn't have to use any 'Dear Sir/Madam' or the level of formality shaped by British colonial influence that I was used to back home. However, some response styles that were common back home were interpreted as passive-aggressive here.

Author B described a similar experience of email as labor-intensive, compounded by the demands of writing in a second language:

I often felt fatigued by the constant need to communicate through email. While many domestic students drafted emails quickly and comfortably, I struggled; each email took me a long time because I would proofread it repeatedly and write several drafts to make sure it sounded professional and formal.

For both of us, email became a site of extended effort, requiring careful drafting, revision, and attention to tone. What appeared to others as delayed or minimal communication often reflected significant unseen labor. As Byron (2008) notes, email lacks interpersonal cues such as facial expression, body language, and vocal tone that help resolve ambiguity. This absence

placed an additional interpretive burden on us as L2 speakers navigating unfamiliar norms, increasing the likelihood of delay or misinterpretation in our communication.

Beyond communication, both of us encountered digital platforms that assumed prior exposure we did not have. Systems such as Canvas required fluency from the outset, both as students and as teaching assistants, yet offered little structured support for learning. Our American peers, having used similar tools throughout their education, moved through these platforms with ease. For us, the learning process was slower and more deliberate, shaping how we completed tasks and how our competence was perceived. This pattern extended to transit applications, scheduling systems, and appointment norms, all of which operated on expectations of familiarity. Our accounts thus show that the barriers we encountered were not simply individual challenges, but effects of systems calibrated to users whose prior educational and cultural experiences align with their embedded norms.

Discussion

Our accounts demonstrate that material, or non-human, conditions do not simply form the backdrop to international students' experiences but actively structure how they unfold. They do so by shaping access, participation, belonging, and embodied wellbeing in ways that are not reducible to social interaction alone. While the limited scholarship that engages these conditions often centers the social interactions surrounding them, our analysis highlights how the material properties of the elements themselves—for example, the location of housing or the intensity of winter—are consequential in producing these experiences. Conceptualized in sociomaterial scholarship as material agency (Barad, 2003; Fenwick & Landri, 2012), this perspective exposes the limitations of human-centered approaches to studying international students' experiences, which attend primarily to social dynamics while overlooking the active force of non-human entities in shaping the conditions of everyday academic life abroad.

Across our analysis, material conditions operated in relation with social arrangements, particularly institutional arrangements. Interpreting our findings through Deleuze and Guattari's (1988) conceptualization of assemblages and its uptake in sociomaterial education scholarship (Fenwick and Landri, 2012), these conditions functioned through configurations of human and non-human elements that together produced particular experiences. In some instances, these assemblages were relatively simple, involving a limited set of elements, such as classroom heating conditions and the institutional decisions governing temperature control. In others, they were more complex, bringing together housing costs, spatial location, transportation infrastructure, climatic conditions, and class schedules to produce compounding constraints on access and participation. Our analysis further shows that assemblages are provisional and continually reconfigured (Deleuze & Guattari, 1988; Due, 2024), as shifts in material and social conditions give rise to different experiences of constraint and opportunity. From a Baradian perspective, these configurations can also be read as agential cuts, as the social and material may be considered as inseparable but entangled (Barad, 2003, 2007).

Critically, the structural barriers revealed in our narratives point to forms of injustice that can remain obscured when the material dimensions of international students' experiences are overlooked. Automobile-centric campuses and community spatial

organizations (Allen et al., 2024), culturally narrow dining provisions (Henry et al., 2025), and institutional schedules that presume ease of mobility are all examples of inequities that socially focused analyses tend to overlook. These findings respond to growing concerns about the limits of experience-focused research with international students (Mittelmeier, 2025b) by showing how attention to materialities brings such critical issues into view. This approach also shifts analytical focus away from deficit narratives of students and toward the systems and infrastructures through which unequal experiences are produced (Lomer et al., 2024). At the same time, it presents international students as resourceful actors navigating these conditions, advancing a strength-based perspective that recognizes their capacities while remaining attentive to structural constraints (Brazill, 2021; Deuchar, 2022). Finally, by attending to the everyday and the mundane, this analysis aligns with Mittelmeier et al. (2025) in demonstrating how such a focus can generate new analytical questions in international student research.

Conclusion and Implications

Overall, this study carries implications across research, policy, and practice. It calls for further research engaging a wider range of methodologies and international student populations to deepen understanding of how material conditions shape experiences across contexts. It also implies that higher education institutions should more explicitly account for material constraints in the design of programs and support structures for international students. These programs and structures could include more accessible and affordable housing options; culturally inclusive dining provisions; targeted orientation and resources for navigating transportation systems and digital platforms; and institutional scheduling that better accounts for housing locations, means of transportation, and climatic conditions. Although grounded in our positionalities and the U.S. context, this study offers insights relevant to other settings, particularly in the Global North where many international students are concentrated and where similar material conditions may be present. At the same time, these conditions are not uniform, as transportation infrastructures, for example, vary significantly across the U.S. and other contexts such as Europe. Ultimately, this study underscores the need for research, policy, and practice that attend to the relational interplay of material and social dimensions if international students' experiences are to be more accurately understood and meaningfully addressed.

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